PS
THE PREVENTIVE MAINTENANCE MONTHL
NUMBER 10
NOVEMBER 1952
RUBBER BANDS
PAPER CLIPS
GLUE
GUM

PREVENTIVE MAINTENANCE . . .

"Success in Preventive Maintenance as in all other military fields springs from the personal interests and enthusiasm of the commander—be that commander a corporal or a general.

"The skilled gunner whose ignorance of cleaning and lubrication procedures results in an inaccurate or dead-lined gun is of little value to the fighting team.

"Maintenance skills are obtained by experience and training. Training time must be provided for Preventive Maintenance.

". . . Command interest and responsibility, supply procedures and basic loads, and training of users, specialists and supervisors—how can we tie all these into a smooth Preventive Maintenance team? How are we going to use the supplies of spare parts and tools we receive?

"If there is a simple answer . . . it is 'Command Responsibility and Supervision.' "

Major General I. D. White
Commanding General, 10th Corps

SHARE YOUR

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Comic Book, indeed! Let us perish that thought aborning. Or in other words, right here and now.

PS is **not** a comic book. It only looks like one . . . because it's easier to read that way. Besides — the real reason airmen missed the last coupla issues is because Air AG authority didn't get through in time.

So how's about it Army—what say we mosey over to the nearest motor pool with our already read copies of PS in our hand, and offer that friendly airman a chance to circulate all that wealth around his shop and driving departments.

Good idea? This is what is known as passin' the book.

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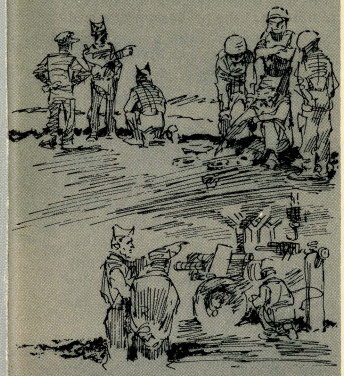
A COMMAND RESPONSIBILITY



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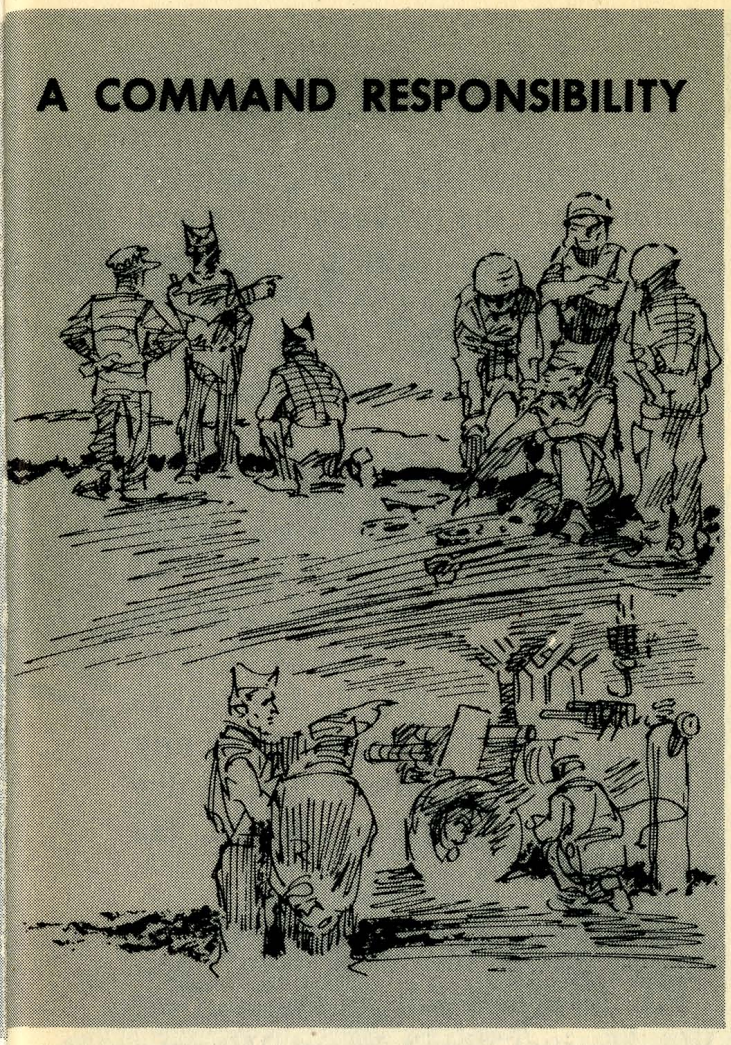

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FORDING AT ZERO

Dear Editor,

PS is a great aid to getting the idea of good PM habits over to the average driver. I found, in many cases, that they either didn't know, or never had any chance to find out.

Like a kid in my outfit . . . had frozen brakes and didn't know it. This kid in his Jeep—you'll laugh—made a trip to the forward holding position about twice a day (and it was cold, about −15° during the day). Just to the rear of the position he had to ford a stream—not too deep, say a foot or 18 inches. This went on about 3 days before it came to my attention (in the form of a squawk) that he hadn't any brakes.

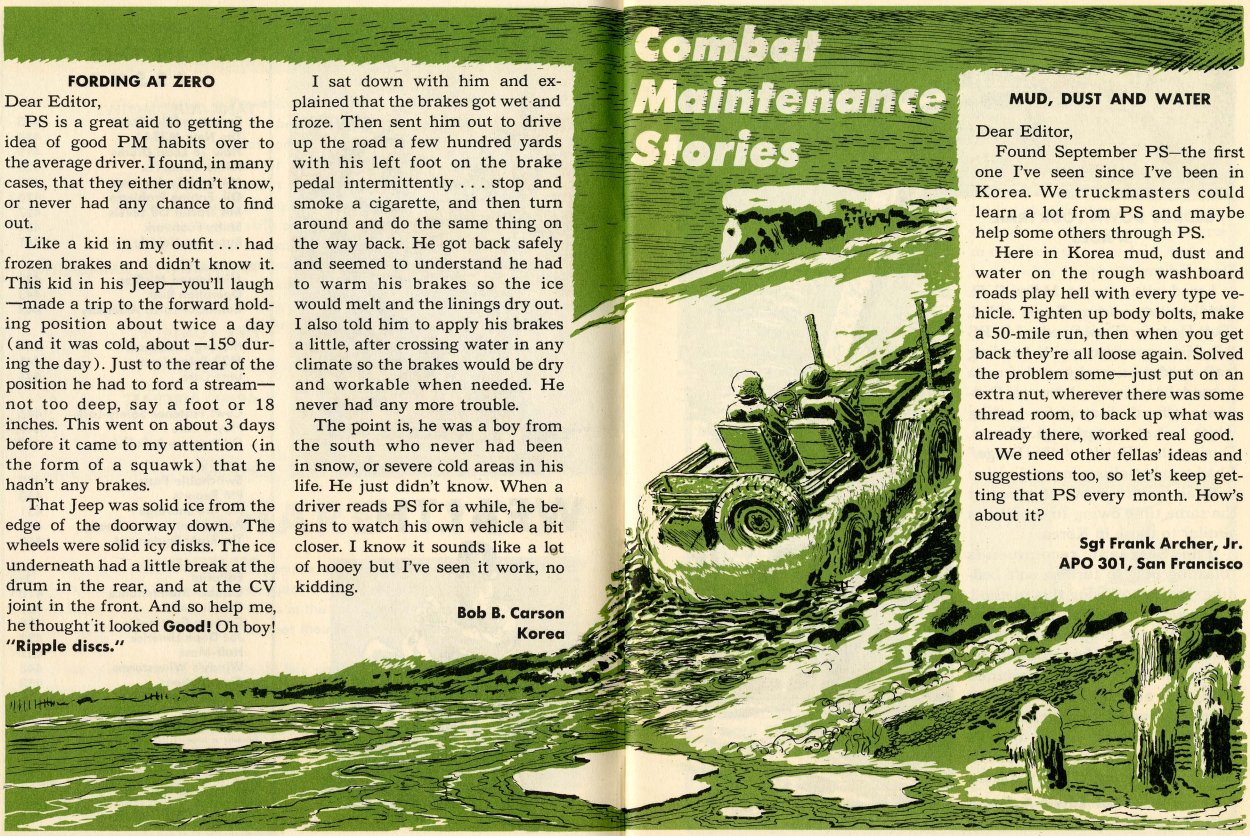
That Jeep was solid ice from the edge of the doorway down. The wheels were solid icy disks. The ice underneath had a little break at the drum in the rear, and at the CV joint in the front. And so help me, he thought it looked **Good!** Oh boy! **"Ripple discs."**

I sat down with him and explained that the brakes got wet and froze. Then sent him out to drive up the road a few hundred yards with his left foot on the brake pedal intermittently . . . stop and smoke a cigarette, and then turn around and do the same thing on the way back. He got back safely and seemed to understand he had to warm his brakes so the ice would melt and the linings dry out. I also told him to apply his brakes a little, after crossing water in any climate so the brakes would be dry and workable when needed. He never had any more trouble.

The point is, he was a boy from the south who never had been in snow, or severe cold areas in his life. He just didn't know. When a driver reads PS for a while, he begins to watch his own vehicle a bit closer. I know it sounds like a lot of hooey but I've seen it work, no kidding.

Bob B. Carson
Korea

Combat Maintenance Stories



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MUD, DUST AND WATER

Dear Editor,

Found September PS—the first one I've seen since I've been in Korea. We truckmasters could learn a lot from PS and maybe help some others through PS.

Here in Korea mud, dust and water on the rough washboard roads play hell with every type vehicle. Tighten up body bolts, make a 50-mile run, then when you get back they're all loose again. Solved the problem some—just put on an extra nut, wherever there was some thread room, to back up what was already there, worked real good.

We need other fellas' ideas and suggestions too, so let's keep getting that PS every month. How's about it?

Sgt Frank Archer, Jr.
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BEDDIN' DOWN YOUR TRAIL SPADES

Dear Editor,

I read with interest M Sgt C. R. Biddle's letter from Korea titled, "Soft Beds for Trail Spades," in PS #7. His experience with bending trail spades in rocky and frozen ground has always been an Ordnance officer's reason for getting white hair at an early age. I know. During the "Battle of the Bulge," I had two battalions in my division with all howitzers out of action at the same time owing to conditions similar to those in Korea.

The Sergeant recommends "blasting out" to furnish soft bedding. Instead of using this method, which we figure could give away to the enemy the position just occupied, we solved the problem by using good old sweat, combined with pick and shovel, to dig trail holes—plus wood from ammo boxes and small trees as fagots, to take up the shock from the trail spades. No more bending of trail spades.

Col Edwin A. Smith
New York Ordnance District

leave filler caps open—hachoo-oo, no transmission

There's a story traveling around about people cuttin' up their M47 tanks cross-beam guards to keep grill covers from breaking transmission filler-caps.

This is to be frowned on same's if you'd see someone take the splint off a man's crutch. It is not the answer to transmission filler-cap breakage.

The cap gets clobbered by the grill only when forgetfully left open after a check or a fill, and cutting away metal so the cap'll flop down out of the way is flying right in the face of human nature.

The same forgetter that leaves the cap propped up will leave the cap flopped down when the guard's gone.

Then you got real trouble.

With the closed grill hiding the open filler, nobody'll give a thought to the fact the transmission's swallowing abrasive dust that has to pass through the machinery before it gets to the filter—if it ever does. And you know what happens next . . . no transmission.

The best thing I can think to tell you for now, instead of cutting away any metal, is to add a small piece. One small hacksaw blade will do the trick if you'll rig it to the filler neck with a hose clamp like these pictures from PS #4 suggested back in September 1951.

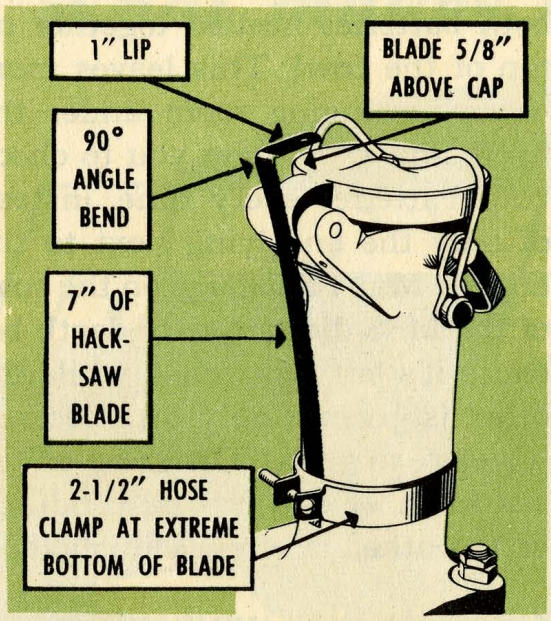


Fig. 1—Make the spring from an 8" piece of hacksaw blade, heated and bent on a ninety degree angle 1" from the rounded end.

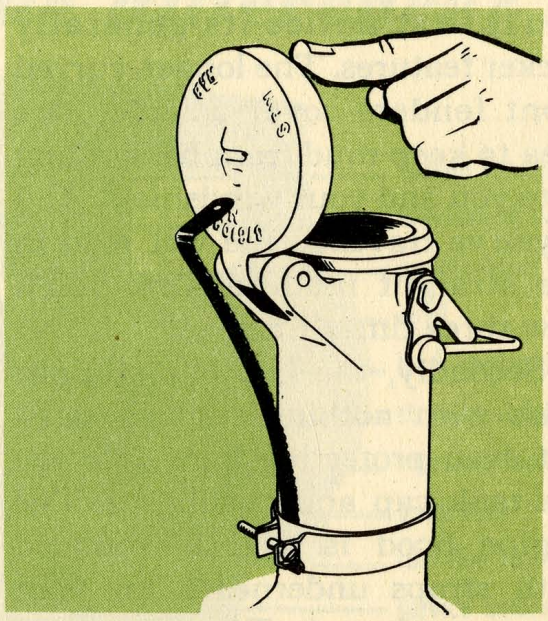
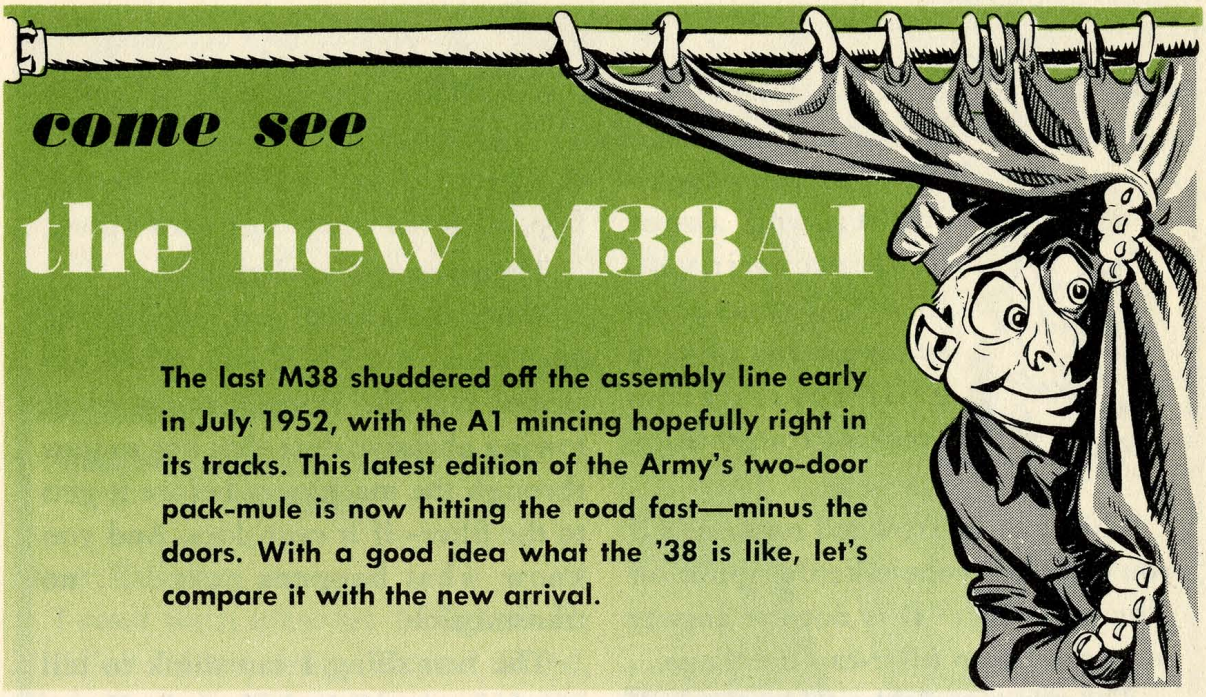


Fig. 2—Clamp blade to fill pipe with a 2-1/2" hose clamp so it's about 5/8" above filler cap when cap's in closed position.

come see the new M38A1



The last M38 shuddered off the assembly line early in July 1952, with the A1 mincing hopefully right in its tracks. This latest edition of the Army's two-door pack-mule is now hitting the road fast—minus the doors. With a good idea what the '38 is like, let's compare it with the new arrival.

Many of the older model's parts will fit the new Jeep, and you'll find some of the new parts usable on the old vehicle, but there are enough changes to keep you alert to parts-supply problems. Read on.

When you see your first M38A1, you'll first notice its generally slicker features. The longer, curved front fenders cover a wider tire area to keep mud from being flung onto you and your windshield. And if you've travelled the wet road in the straight fendered '38, you'll bow three times East.

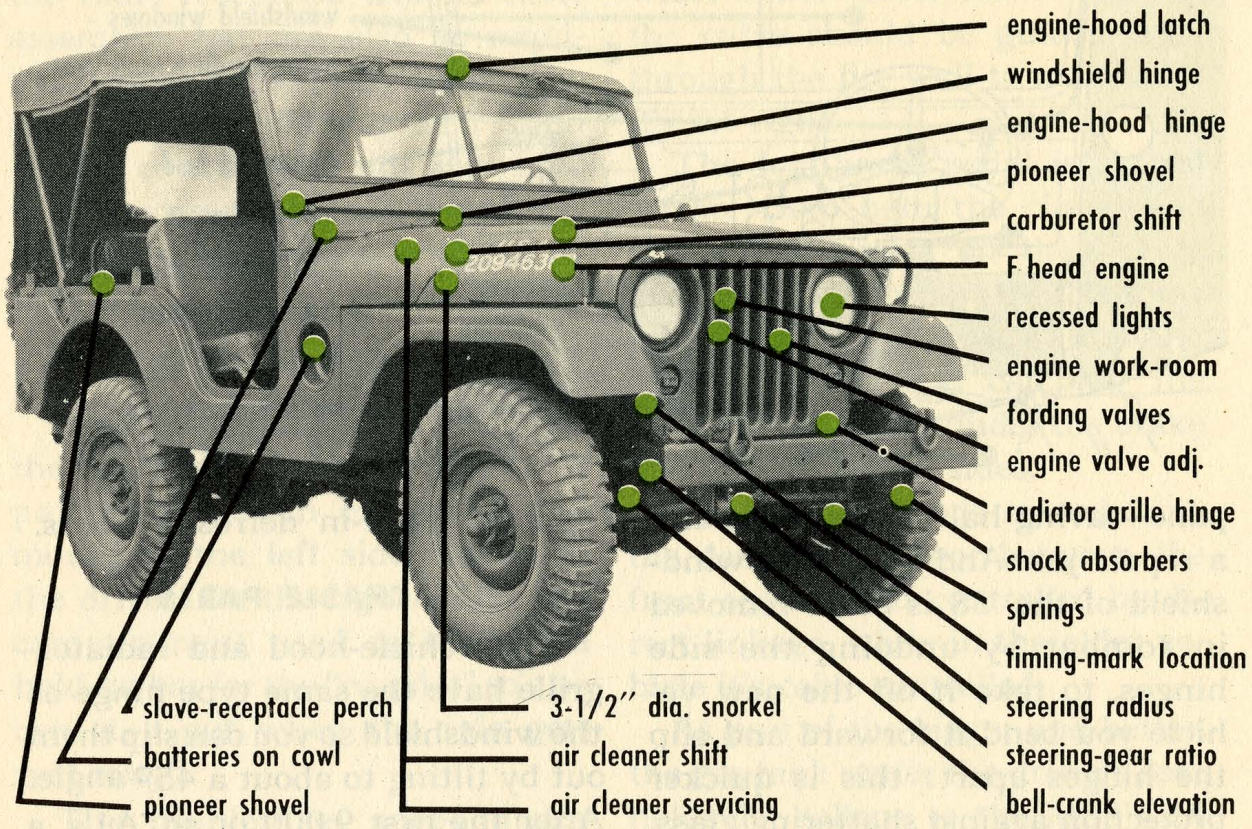
Secondly, the 'A1 has straight sides with nothing sticking out—not even protecting bars over the gas-tank cap and headlights. The engine hood is slightly rounded with straps underneath for your pioneer shovel. The axe gets strapped to the right rear-wheel housing. Nothing now to snag you climbing in and out.

Compared to the M38's 132-15/16″, the 'A1 is 138-5/8″ long. The tailgate's no longer there. And without the tailgate, there's no problem of its anchor-bracket breaking loose.

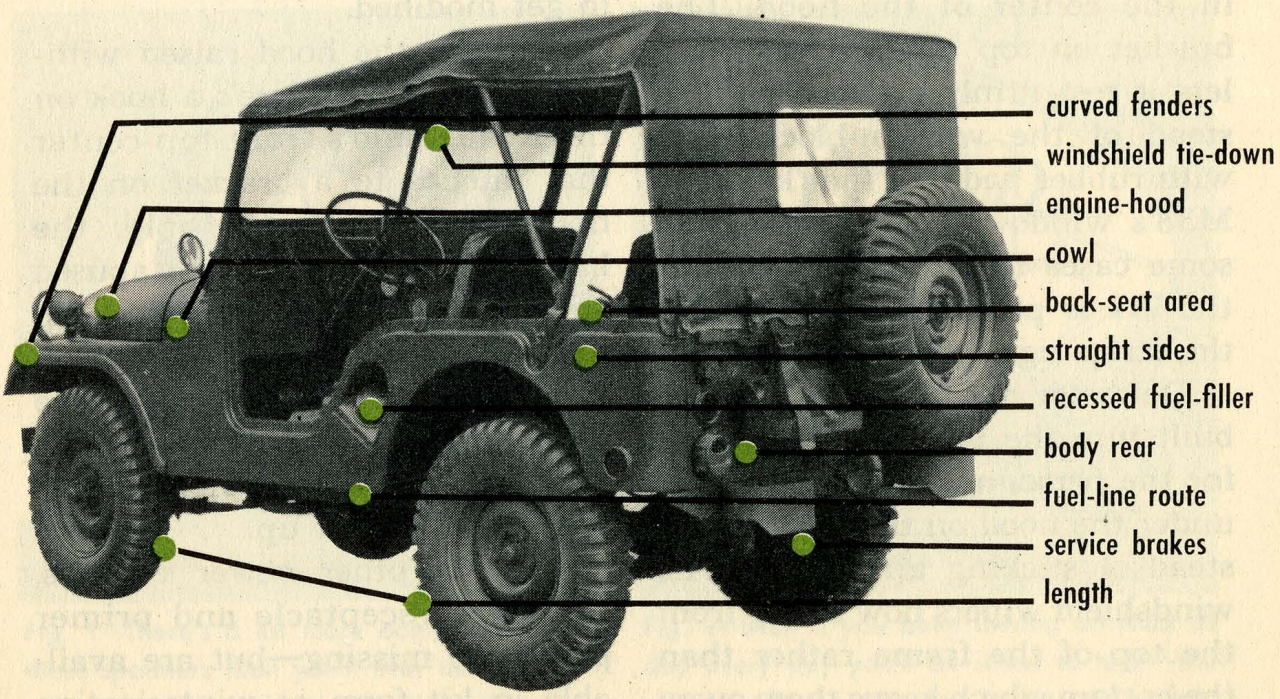
Come up closer and you'll see both batteries nestled together on top of the cowl. This leaves more wrench-swinging room under the hood, and should get you to check both batteries every time, instead of only the one lying next to the engine. Many a battery on the cowl of the M38 dies an early death because it's left untouched while the other is given kindly care because it's easy to get at. Guessing at the condition of one by the condition of the other is often a mistake.

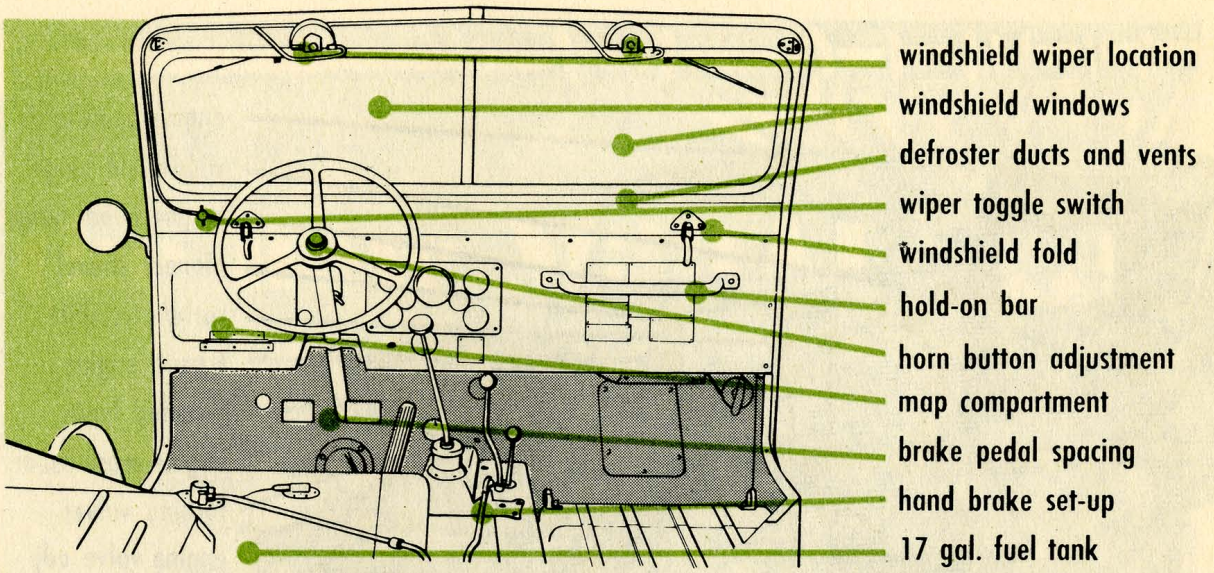
ALL NEW WINDSHIELD

The windshield's been changed too. The 'A1 has a two-paned windshield, while the '38 has only one



What makes the difference?





pane—saving half a glass on many a repair job. And while the windshield of the '38 is often removed in combat by undoing the side hinges, to take it off the new vehicle you bend it forward and slip the hinges apart: this is quicker protection against shattering glass. The windshield can also be folded forward at the base of the frame and tied down to a metal bracket in the center of the hood. The bracket on top of the windshield lets it rest firmly on the hood instead of the wooden-block rests with rubber padding that kept the M38's window from breaking. In some cases the tie-down strap of the 'A1 is put on backwards. Set the strap right and belt it tight.

Defroster vents and ducts are built into the new vehicle, all set for the personnel heater that goes under the hood on the left side instead of sticking up on top. The windshield wipers now swing from the top of the frame rather than the bottom which keeps them away from the built-in defroster vents.

DETACHABLE PARTS

The vehicle-hood and radiator-grille have the same type hinge as the windshield so you can slip them out by tilting to about a 45° angle. After the first 9,000 or so 'A1's, a safety latch was added to the front center of the hood as an extra precaution. Early models are s'posed to get modified.

To keep the hood raised without taking it off, there's a hook on the windshield's front-top-center that latches to a bracket on the hood. If this doesn't hold, the bracket on the hood is being abused and may need tack-welds to keep the hood from slamming down on your head. The M38 doesn't have these difficulties—but neither can you take off the hood, nor is there a catch to keep it up.

Like on other newer vehicles, the slave receptacle and primer pump are missing—but are available in kit form as winterization

equipment only. Missing, too, is the radio receptacle and its cable assembly that can also be requisitioned in kit form by those who need them. A circular depression on the cowl's right side will hold the slave receptacle and keep it below the side's surface if you're issued one.

SAFETY FEATURES

Now look around the inside of the cab. You'll notice the map compartment's been enlarged and moved to the left side, handy to the driver. On the right where the compartment used to be, sits a hold-on bar for the "co-pilot" so's he can stay put when the ride gets real rough.

The problem of speedometer cables getting kinked, when the M38's instrument cluster is replaced in the panel, is partly overcome on the 'A1 by the longer and wider space under the cowl. Still, the cable should be guided back through the fire wall to make sure it's set right.

The foot-brake pedal is spaced farther from both the clutch and accelerator pedals on the 'A1 to avoid the close-pedals trouble some men have on the M38, slowing their reactions and catching the soles of their shoes under the brake and clutch pedals' sides.

The hand-brake is moved from the dash to the floor between the front seats and is controlled by direct linkage, while in the older vehicle it's cable controlled.

As part of the bigger and better, the gas tank under the driver's seat holds 17 gallons to the M38's 14 gallons. But the one-inch gap next to the pocket in which the tank sits will collect damaging debris

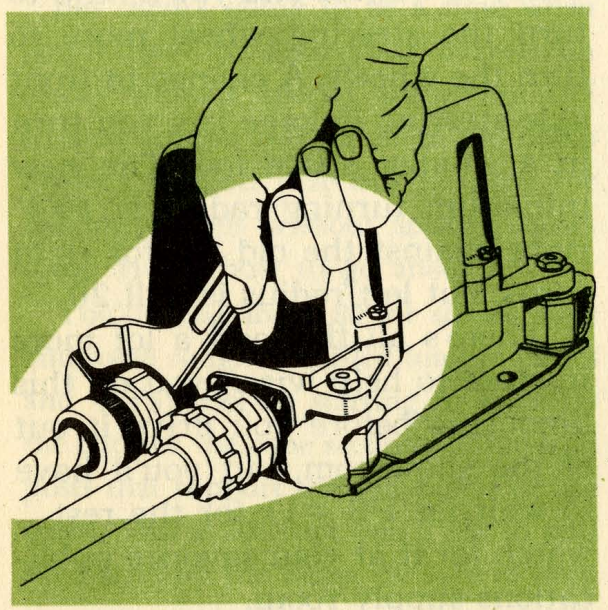


Fig. 1—There's a lot more oomph in one of these spanners than you'll ever need on soft connectors. Snug em up watertight, then quit.

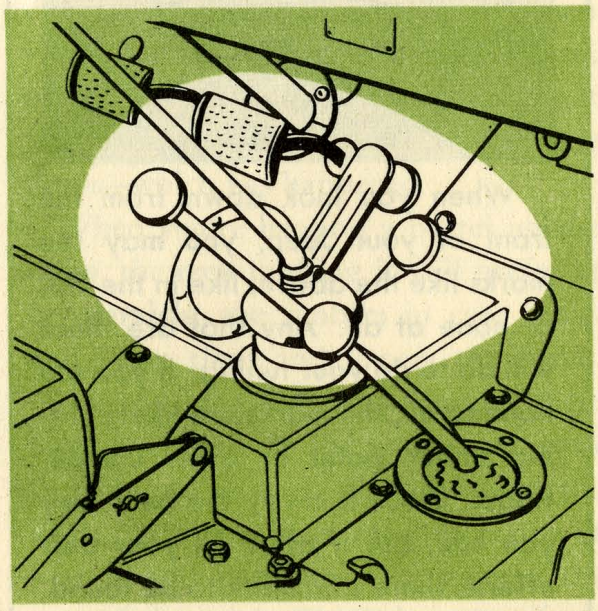


Fig. 2—Even if you been driving an M38 all day every day you'll be smart to tune your reactions to the A1's new levers and pedals.

unless you stuff it with a scrap of rubber or something.

The diameter of the new snorkel tube is 3-1/2″ instead of the 2-1/2″ it replaces, giving your engine easier breathing when set for fording. The fording valves are vertical now and should open easier when the handle's pushed in. But like with the horizontal valves of the earlier vehicle, you'd better check, mate, under the hood to be sure the valves stay open while you're a landlubber.

NEW SUSPENSION

Getting down and underneath, look first at the springs. To give you an easier ride, which you've been longing for, and to match the longer wheel base of the bigger vehicle, the springs have been made longer and are spaced a little farther apart than on the '38. This in turn means more jounce-space —the new springs let the wheels and axles bounce around in a bigger area under the vehicle.

With the jounce-space enlarged, the shock absorbers are longer and have more travel, but the travel is sort of restricted and not spongy. Otherwise you'd occasionally fly out on your ear and leave the vehicle driverless. The change in the jounce that set the bell-crank higher above the steering knuckle called for new linkage that will not interchange with the M38.

The steering ratio is increased from 14 to 1 on the M38 to 19 to 1 on the 'A1. This means less tendency to wander and you'll have to turn the steering wheel more to turn the wheels. A change in front axle steering linkage lets you turn in a smaller space too. The new minimum turning radius is 19′4″ right against the old 20′ for right turns, but left radius is still 20′.

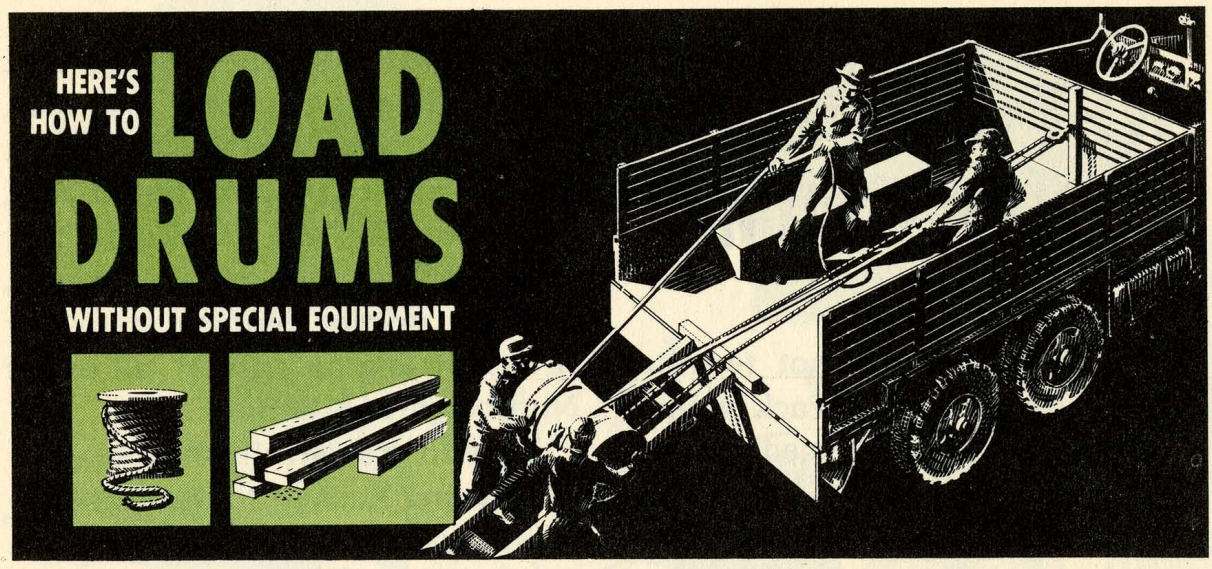
There's all this and a lot more in store to help wisen you on this limousine before you drive it out of the showroom, but you'll have to wait for PS #11 for the rest... watch for it at your favorite publications-supply room.

(This is the first of two introductory articles.)

M38A1 TIMING MARKS

When you look down from the front of your Jeep, you may see marks like the above, like in the TM, or none at all. Any that are there will do to do your tuning. If you see none at all, the marks are likely hiding under paint or other camouflage. Clear it away the best way you can, but if after all your best efforts, there's no mark to be found, you've nothing left to do but PDQ a UER.

HERE'S HOW TO LOAD DRUMS WITHOUT SPECIAL EQUIPMENT



Word has been going around that some of us are treating the beds of our trucks pretty rough when loading barrels. Seems that some who are lucky enough to have fancy loading equipment aren't even using it right.

When you hoist those barrels over the side or over the tailgate, let 'em down easy—same goes for when you're rolling them off a platform or ramp—ease 'em down.

But there's going to be a time when you'll have to load your barrels on trucks without special equipment. PS scouted around and found an old bomb loader's method that can be used for loading barrels without special equipment. Here's how to go about it.

You'll need about 80′ of strong rope and some rough or milled lumber (2x4's and 4x4's). Before starting to load, tie the ends of the rope securely to the iron posts that support the backboard of the truck. This is the rope you'll use to pull the barrel up the ramp. Be sure to keep the rope inside the ramp so it won't slip off the barrel.

Cut the 4x4's into two 12′ sections for the ramp. Make the ramp wide enough so that the outside edges of the timbers are about 8″ from the ends of the barrel, and keep the timbers from spreading by nailing on two or three crosspieces. Use the 2x4's or empty boxes to build one or two supports for the ramp, depending on the load. It's a good idea to set a short timber between the top of the ramp and the truck so the barrel will roll instead of drop on the truck.

A few words of caution: the reason you don't set your ramp on the tailgate of the truck is a good one. You might fall flat on your face when the gate drops—which has happened.

When you're hauling a barrel up the ramp, the men pushing it will prefer to be **outside** the timbers in case somebody gets tired and lowers the boom.

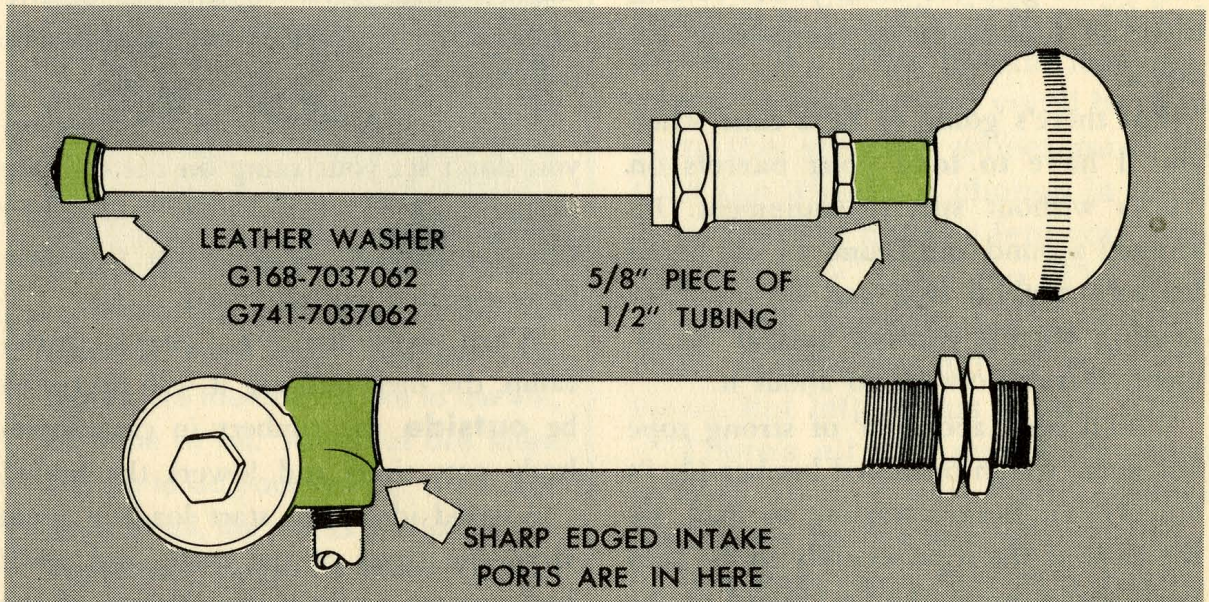
A good idea is to start loading them from the front of the truck and work back, to get an even distribution of the load. Lay a crosspiece after each row of barrels and jam 'em tight against the rear of the truck. This'll keep 'em from Jersey Bouncing all over your side cargo racks, troop seats, and tailgate.

WHY THE PRIMER DOESN'T PUMP

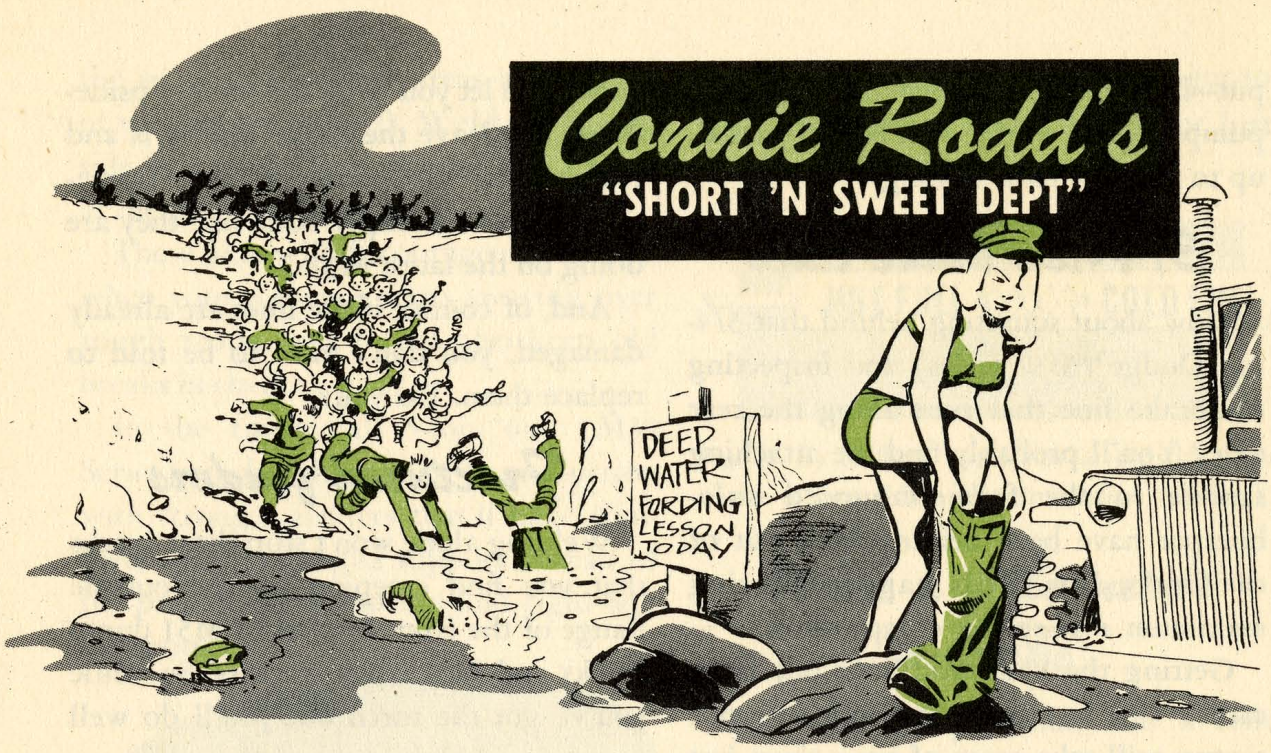
It's a guillotine and not termites that's been putting track vehicle (and some of your wheeled vehicle) primer pumps on the blink. The guillotine is the razor-edged intake port (or ports) near the bottom of the pump cylinder that take a slice out of the leather piston every time the washer passes by, and eventually louse up its sealing action. Then, much pumpee, no gasee.

First thing to do is unscrew the collar from the pump cylinder, pull out the plunger and inspect the leather piston washer at the end. If its sealing lip is nicked to shreds, draw another washer—listed in SNL's as "Plunger, hand rod, (leather) G741-7037062"; or "Plunger, pump rod, (leather)"; or "Cup, primer, plunger stem"; or "Plunger, engine primer", all under Number G168-7037062.

Now to prevent this new washer from being hacked to death, screw off the plunger knob, and on the rod just below the knob threads, solder a 5/8″ piece of 1/2″ tubing. This will shorten the pump stroke enough to keep the washer away from the sharp-edged fuel ports, but will not affect the fuel supply to the engine so's you'd notice it. It'll take about four-and-one-half strokes where it took four before.



On pumps like this that are now coming out of production you'll not need the above fix because the ports' sharp edges have been smoothened . . . thanks to the gentlemen who did their griping on a UER.



Double-check for water

Confession is good for the soul—so let me tell you about yesterday. I checked a 2-1/2-ton M34 for water: removed the radiator cap, took a peek, saw water, and said, "OK."

Friend driver behind me said, "Yeah?" And proceeded to add water. **Two gallons** of water! I wanted to die.

The trouble was that I saw just a pool of water trapped in the filler neck. If the filler neck were straight, like on later production models, this wouldn't happen; all the water would drain into the radiator core. But, you'll notice that the filler neck on most the Reo and Studebaker 2-1/2-ton 6x6's is at an angle—inclines to the rear. Which is why the filler neck can hold a little pool of water while the radiator still needs gallons more.

These radiators ought to be filled while the engine's at normal operating temperature, they'll hold 22-quarts, and you should see the water trickling out of the level cock in the filler neck, when you drop the hood side panel, which is the way you're supposed to do it anyway (see TM 9-819). Just make it a sure-check. It's no-fair peeking—it might get you a cracked head.

Slave receptacle and primer now extras

Couple of part-timers that the interim transport vehicles have been totin' around on a full-time basis have been put in the "just-in-case" class. According to recent engineering change orders the slave receptacle, and also the primer pump, and parts, are no longer being installed on production (transport) vehicles. From now on the items will be furnished by Ordnance in kit form and mounted only when required. In the holes where they used to be, you'll now find plugs.

For those vehicles in the field, slave receptacles and primer pumps should stay

put—but you'd best keep hands off the pump or your engine will be too gassed-up to know what it's doing.

3/4-ton brake lines

How about squatting behind that 3/4-ton Dodge (M37 series) and inspecting the brake line that runs along the rear axle? You'll probably find the attaching screws in the frame-mounted axle-bumper have been beating heck out of the brake line. This happens during maximum rear-spring compression.

Getting the hydraulic lines out from under the bump of the axle-bumper screws will take some of your time, but not much else. Loosen their retaining nuts and topsy-turvy the two end hold-down clamps, after you've uncrimped the brake line; then crimp the clamps back over the line—and you'll stay out of trouble (Fig. 1). Yes, the lines will flex enough to let you hang the clamp upside-down. Or leave the brake line as is and reverse the direction of the frame-mounted axle-bumper bolts like they are doing on the latest M37.

And, of course, if the lines are already damaged, you don't have to be told to replace them. Do you?

Fractured fenders

Welding alone won't stop those cracks that you find creeping up the outside flange of the front fenders of M51 dump trucks and M52 truck tractors. So while you've got the torch out you'll do well to put in a brace.

You can be real generous and weld a long piece of flat steel (1/2" thick) to the outside edge of the fenders to give 'em solid support from front to rear.

Or just weld short lengths of 3/8" steel bar at all the sharp corners and over

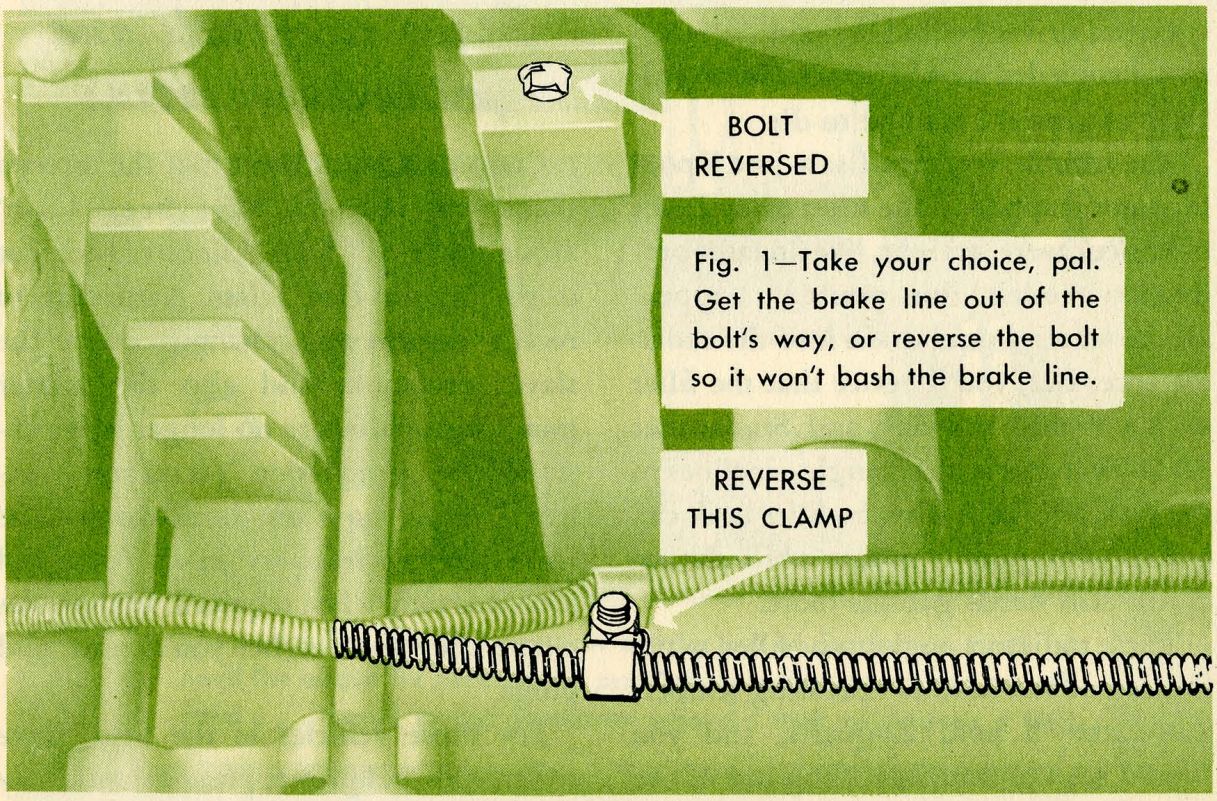


Fig. 1—Take your choice, pal. Get the brake line out of the bolt's way, or reverse the bolt so it won't bash the brake line.

the small notched-out areas at the rear of the fenders (Fig. 2). Weld the bar inside the fender just behind the lip, or at the point of fracture.

These fixes will discourage new breaks when your 5-tonner starts swaying over rough roads, and they'll also keep old breaks in check.

In the future, all 5-ton, 6x6 (M39 Series) trucks will roll out of production with stronger fenders that'll have complete spring-mounted support instead of the present partial-spring and rigid-bolt mounting.

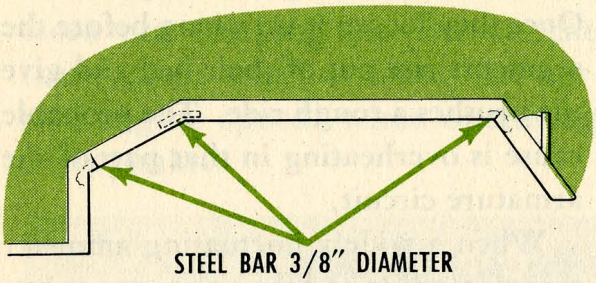


Fig. 2—Cracked right-front fenders can be mended to reinforce them—this will also tend to discourage further cracking.

Transmission dipstick —hot or cold

OE #10 on a background of bright metal leaves plenty of room for guess work when you take a reading on your M135 Hydramatic transmission oil-level dipstick. But a couple of little holes drilled in the dipstick will pick up a film of oil that lets you see right where it is. Or isn't.

Take your dipstick out of the oil-filler tube. Hold it with its flat side up and drill a 5/64" hole thru it, centering the drill on the COLD FULL mark (Fig. 3). Repeat the deal by centering the drill on the HOT FULL mark. All you've got to remember now is that a hole's not just a hole, it's got a purpose.

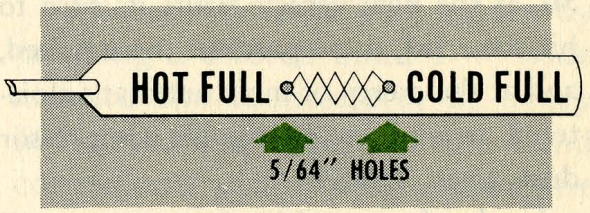


Fig. 3—By drilling two holes in dipstick, you make a sure thing of transmission oil-check.

When a fella needs a brake

Just read a report that said a fella stacked up a hack because he didn't have brakes when he needed 'em. He had a bad left-wheel-cylinder inlet-connection—and all his brake fluid had leaked out of the system.

Make sure **your** hydraulic line connections are tight all the time . . . all the time . . . all the time . . .

Air compressor lubing

If the engine-lubed Bendix-Westinghouse air compressor in your new vehicle goes temperamental on you, with stuck-open unloader-valves or rust on other unloader-mechanism parts, here's what you can do to coax'er back to action:

Remove the air compressor dust-cover and give the entire unloader mechanism a liberal coat of OE 30.

Actually, this air compressor isn't misbehaving without cause. A recent field survey of new vehicles in storage, tells me the condition is encouraged when new vehicles are put in storage before

the new engine's seen enough action to follow thru with its job of seeping lube thru to the unloader-mechanism parts. So, as the new vehicle waits its turn to hit the road, these parts sit there naked, and at the mercy of moisture that's cloistered around 'em by the air compressor dust-cover . . . See?

In the future, this air compressor'll get a shot of extra lube in production so it can ward off damaging rust while a vehicle's in storage.

Silicone oil-seal treatment

In case you haven't yet wised-up to the tender feelings of those silicone oil-seals used in CD-850 transmissions . . . this is to tell you they really don't need extra pampering, just fair treatment.

I hear tales that some tank people shorten the life span of silicone oil-seals by substituting Diesel oil for specified transmission lubricants, then wonder why their tank doesn't steer and shift as it's supposed to. Here's why:

Diesel oil, kerosene, mineral spirits, and other aromatic lubricants or solvents, are no match for the makin's of these seals. Contact with the silicone afore mentioned items makes rubber swell, break, and just plain go blah—and then they can't do the work they're supposed to do.

The same reasoning holds when cleaning the seal during a transmission teardown—use only OE #10, plus keep them clear of all abrasives, because they tear easily.

So, Ple-e-ease, if you see anyone cutting their transmission oil with aromatic solvents for easier starting, or using any other transmission lube than OE #10, pass along the good word, will ya?

Loose commutator bars

About all that can be done when the commutator bars shake or break loose in a generator is to get a new generator. Once they loosen it isn't long before the segments rise out of their bed and give the brushes a rough ride. The probable cause is overheating in that part of the armature circuit.

When a widely fluctuating ammeter signals trouble and the voltmeter points to the generator, that sealed unit should be exchanged and turned in for overhauling.

New tire pressure

A letter from Ordnance to all high headquarters dated 22 August 1952 clears up the sleet-storm of claims and counter claims about the well-known wearing and cupping of M34 11.00 x 20 tires. The new specs, based on results at tire-test headquarters, call for 70 psi highway pressure and 1/8 to 3/16 toe-in.

Please to set your vehicles to these new figures by yesterday at the latest.

KEEPIN' M4 TANKS IN THE GREEN

Dear Editor,

After a rough time with blown head gaskets, burned valves, and general failures of the GAA Ford engine in our M4 tanks we came to one conclusion... they're caused mostly from lugging engine under load, idling for long periods at too low an RPM, and in some cases excessive speed.

In other words, our M4 drivers were not keeping an eye on the tachometer and not using the correct engine speeds when operating their tanks.

We curbed their bad habits by painting a colored band 1/4" wide around the tachometer of every M4 tank. The colors of the band correspond with the correct engine speeds and give the driver a quick reference.

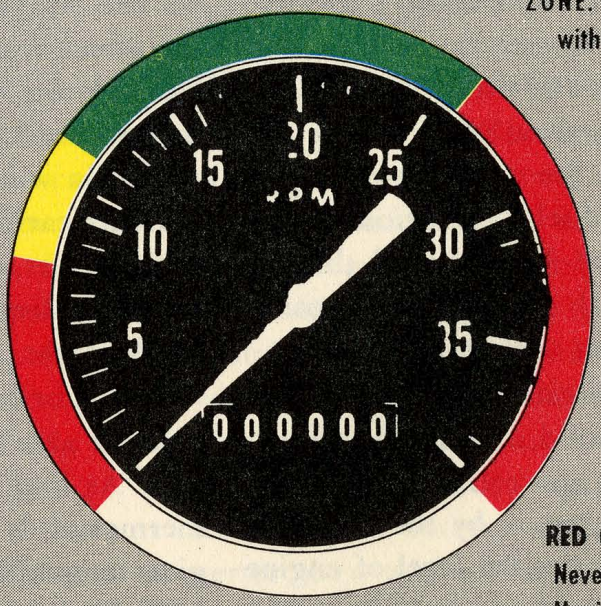
Since we've adopted the procedure below, engine failures dropped off almost to none. Since the idea helped us perhaps other M4 tank units may benefit by the system.

Lt S. T. Wharton
Fort Hood, Texas

HOW TO USE THE COLOR-BANDED TACHOMETER:

YELLOW (800 to 1200-rpm)
This is the idling zone. (Although the carburetors are set to idle at 500-rpm, the engine should be hand-throttle set at 800-rpm for long idle.)

GREEN (1200 to 2600-rpm)
STANDARD OPERATING ZONE. Maximum speed with load 2600-rpm



RED (0 to 800-rpm)
Never operate in this zone. (During shifting RPM's may drop into this zone . . . get back above 1200-rpm as quickly as possible.)

RED (2600 to 4000-rpm)
Never operate in the RED. Maximum speed without load 2800-rpm (top governed speed).

Half-Mast answers two old, familiar questions about

OIL, ENGINE

Dear Half-Mast,

Does motor oil wear out? If oil could be kept free of sludge and foreign matter would it still do the job regardless of how long it would be used?

PFC F. E. D.

Dear PFC F. E. D,

In the strictest sense of the word oil does not wear out. **But,** it's almost impossible to keep motor oil pure. Once oil gets thick with sludge it's no good as a motor lubricant—so, we say oils do wear out.

Road dirt, engine soot and similar foreign matter that doesn't dissolve in oil, can be filtered out mechanically. But filters can't trap other impurities that do dissolve in motor oil. For example, the acid impurities oil collects from fuel combustion. If you allow them to increase and thicken the oil, you'll soon have corrosion eating away at some metal parts.

Some oil-filtration systems will remove both solid and soluble particles, but they also rob the oil of soluble additives put in by the manufacturer to get a desired level of engine performance, and so break down the initial qualities of the oil.

Dear Half-Mast,

We've found cases of engine oil discoloration in our 1/4-ton, 4x4, M38 trucks. Engine oil shows a marked grey color after about 200 miles of operation. It feels smooth, and magnets dipped in oil collect no metal dust. Does this coloring affect the lubricating qualities of the oil?

N. H. P., OCT

Dear OCT N. H. P,

Nup, oil discoloration is quite common. Probable causes: Condensation (in settled oils the particles of foreign matter that cause the discoloration are held suspended by detergent additives); short runs of the vehicles or slow speed operation in which engine temperatures don't get high enough to evaporate water vapors in the crankcase; or a clogged crankcase ventilating-system. The crankcase ventilator-valve, the line to the valve-chamber cover and the screen inside the cover should be cleaned. Storage of a vehicle in a damp place (or a chilled engine) results in water condensation and oil emulsification. A leaky cylinder-head gasket, a sand hole or a crack in the cylinder block or cylinder head might cause discoloration.

The lubricating properties of engine oil aren't effected by discoloration. As long as the cooling system thermostat is working and the engine temperature doesn't dip below 140° F, the oil is good for the prescribed limit (normally)—6,000 miles.

Half-Mast

Dear Half-Mast,

The way to check the transmission and differential oil level in the M4, M4A1, M4A1C and M4C High Speed Tractors is a subject of much confusion. TM and LO 9-785 says: "Operate vehicle a short distance then check oil-level and add lubricant to bring level to 'full' mark." The questions are: should level be checked two minutes after operation, immediately after or while motor is still running, and if running, should it be at idle speed, 900-rpm or what? Could you also give us the right procedure for checking torque-converter oil-level?

These questions are not senseless —widely different results are obtained when level is checked under various conditions. Hot or cold oil would cause further differences.

If you could run down the proper procedure it would avoid much confusion and probably save a few transmissions.

E. M. H., OCT

Dear Mr. E. M. H.,

We knocked some of our best heads together to get you these answers:

check daily!

Oil-Level in Transmission and Differential:

Change every 100 hours. Drain only after operating (while oil is hot), if vehicle has been standing, operate vehicle (not idle) for a minimum of five minutes, stop engine and drain. Fill with 28 qts of oil, then check level.

every 100 hrs

Check daily. Check immediately after operation with engine stopped and while oil is at its normal operating temperature. Check must be made **within** two minutes after stopping engine. If vehicle has been standing, or after refilling, operate vehicle (not idle) for a minimum of five minutes to bring oil to normal operating temperature before checking. Add lubricant to bring level to full mark on gage.

check daily!

2 min.

5 min.

Oil-Level in Torque Converter:

Change every 100 hours. Drain after operation (while oil is hot), through the torque converter drain-plug and reservoir-drain-cock. After the system has been completely drained, fill fluid reservoir with Oil, Fuel, Diesel—then start and run engine at half-throttle (1300-rpm), engage master clutch to operate torque converter then add oil until 34 qts are consumed. (Over-all capacity is 35-1/2 qts, using less will pre-

check hot!

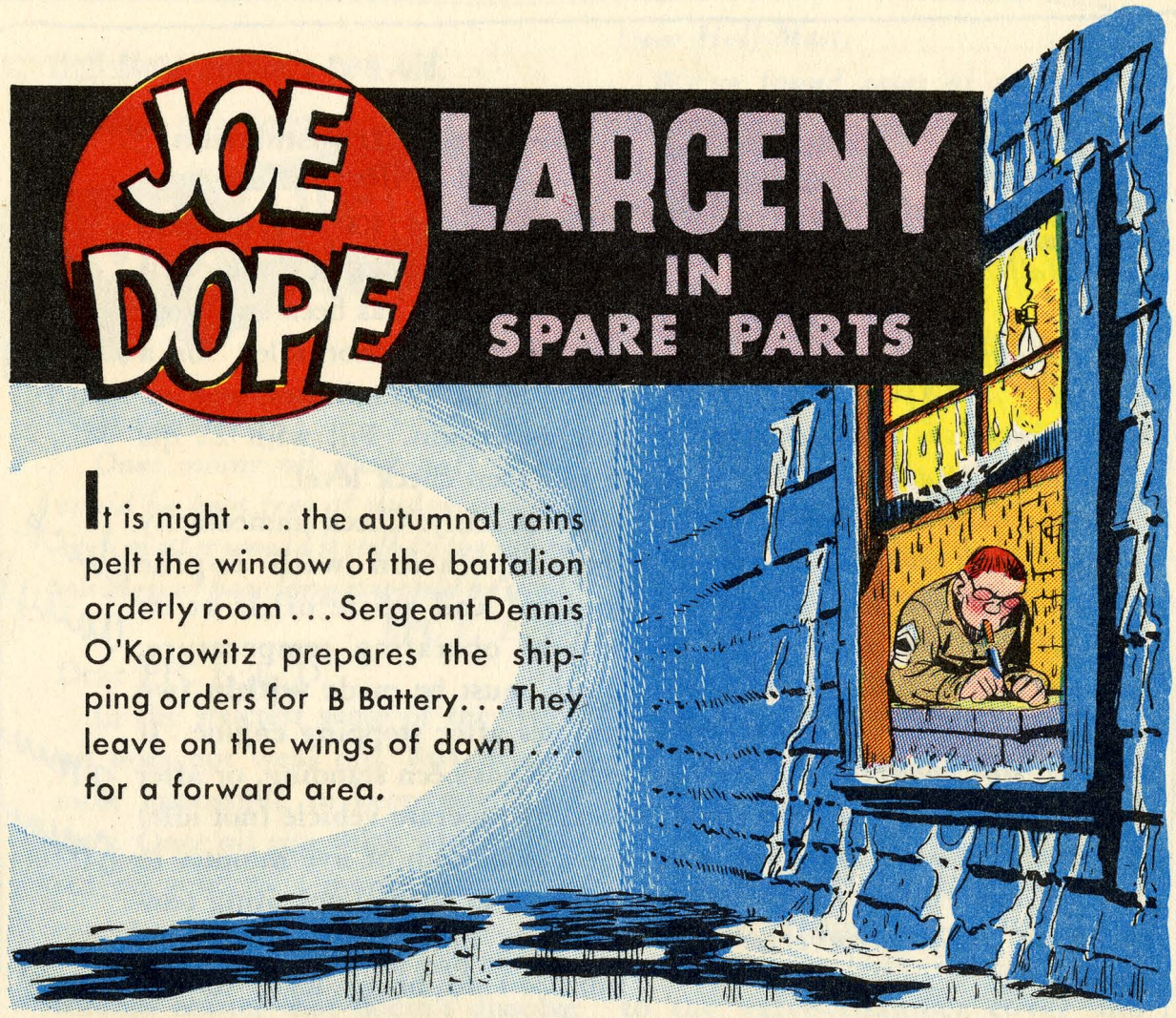
drain hot!

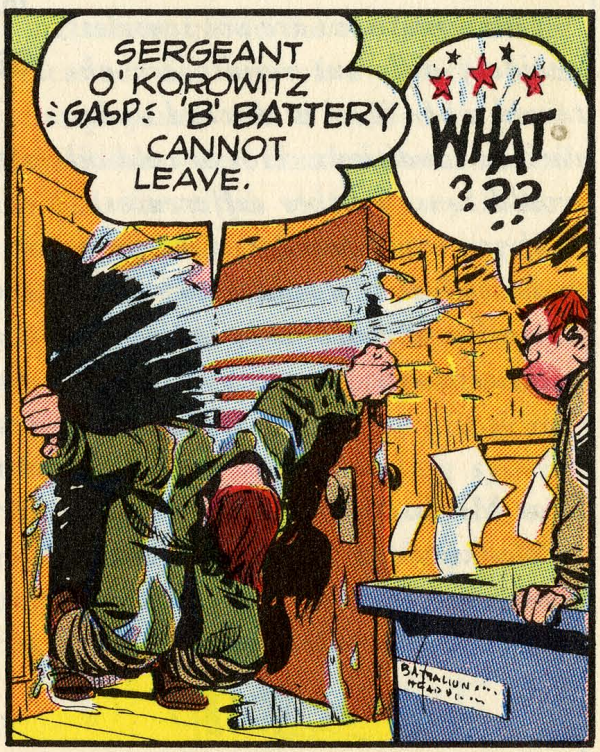
Continued on page 456

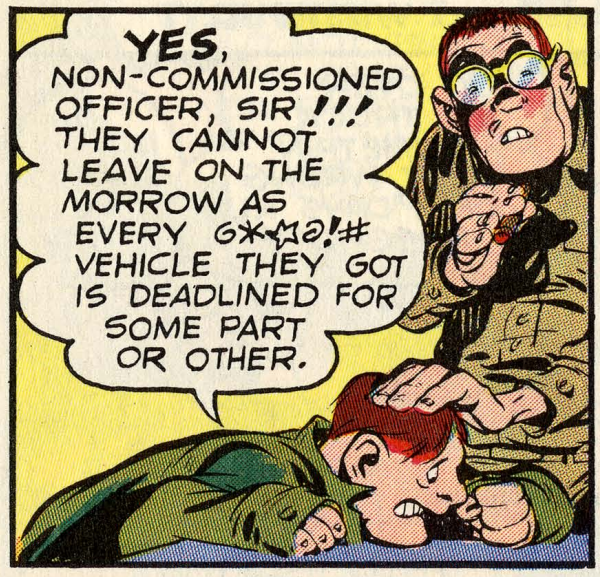
JOE DOPE

LARCENY IN SPARE PARTS

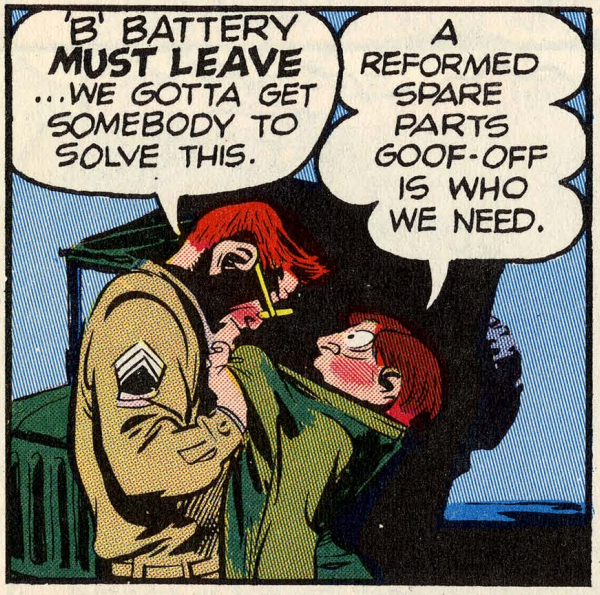
It is night . . . the autumnal rains pelt the window of the battalion orderly room . . . Sergeant Dennis O'Korowitz prepares the shipping orders for B Battery. . . They leave on the wings of dawn . . . for a forward area.



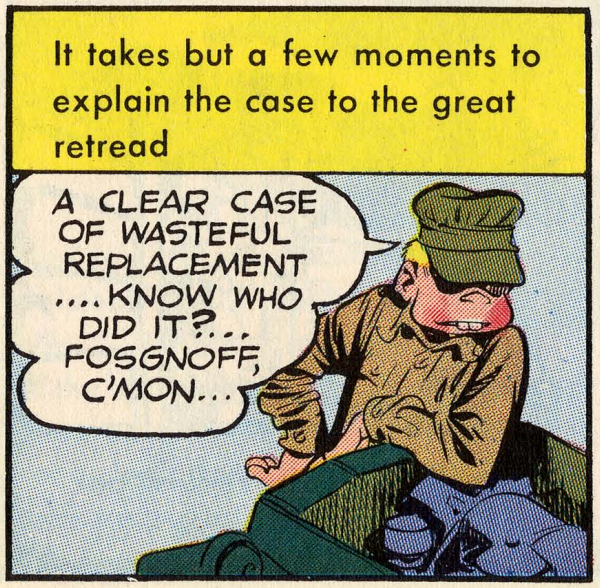



YES, NON-COMMISSIONED OFFICER, SIR!!! THEY CANNOT LEAVE ON THE MORROW AS EVERY G*☆@!# VEHICLE THEY GOT IS DEADLINED FOR SOME PART OR OTHER.

GAD, CORPORAL CRUDD, YOU ARE RIGHT...BUT LAST WEEK BATTALION HAD PLENTY OF PARTS... WHY?..WHY?

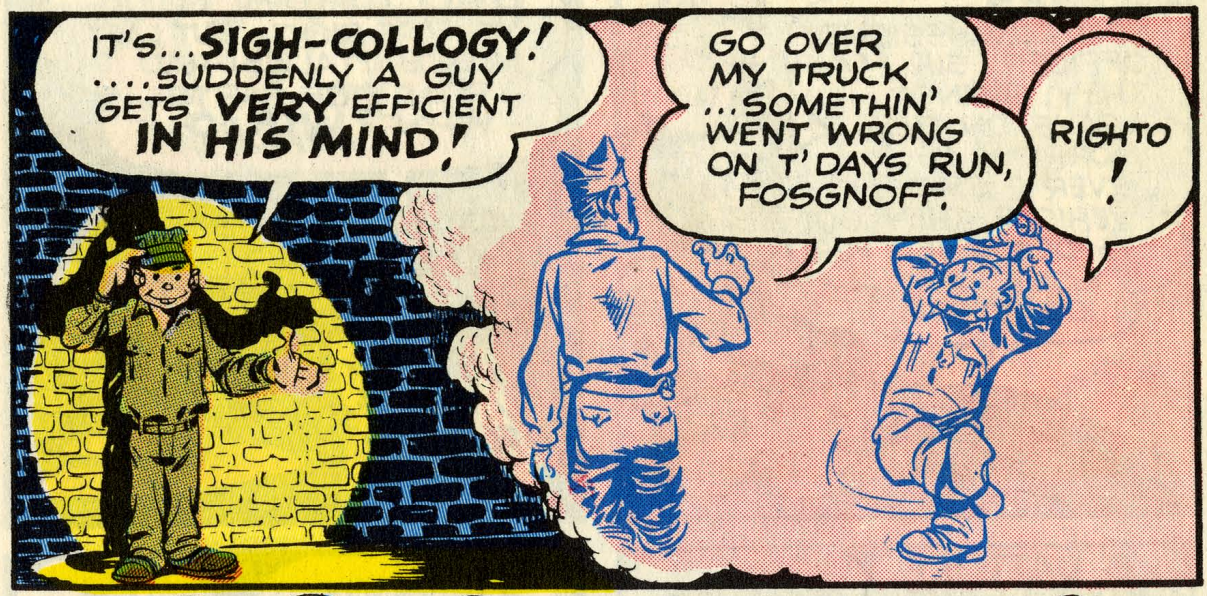

'B' BATTERY MUST LEAVE ...WE GOTTA GET SOMEBODY TO SOLVE THIS.
A REFORMED SPARE PARTS GOOF-OFF IS WHO WE NEED.

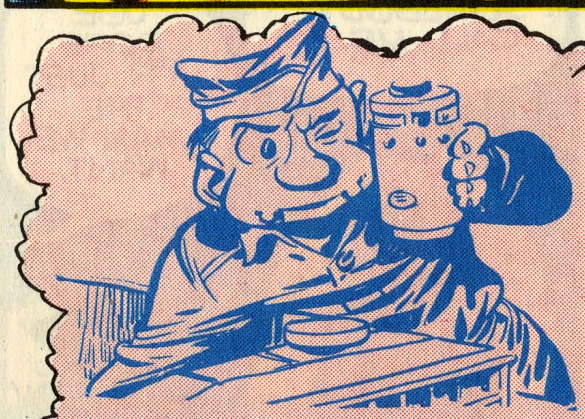
SOMEBODY CALL ME...
JOE DOPE Y'R JUST THE MAN WE WANT.


It takes but a few moments to explain the case to the great retread
A CLEAR CASE OF WASTEFUL REPLACEMENT ....KNOW WHO DID IT?... FOSGNOFF, C'MON...

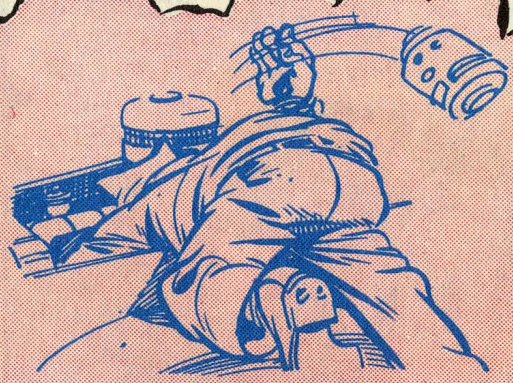
. . . And a few minutes later
I DIDN'T DO NO SPARE PARTS HOARDING...I JES' REKAZISHUND WOT I NEEDED.

But what he "needed" depleted stock **WASTEFULLY!**

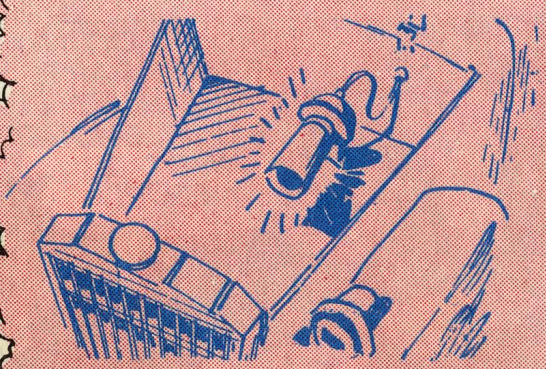




Here's his chance, he thinks, to buck for a promotion . . . He begins to "MAINTAIN" like the dickens . . . by discarding.

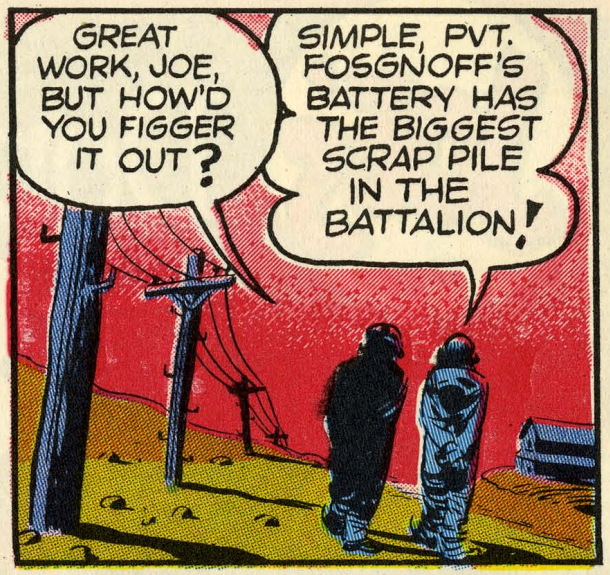


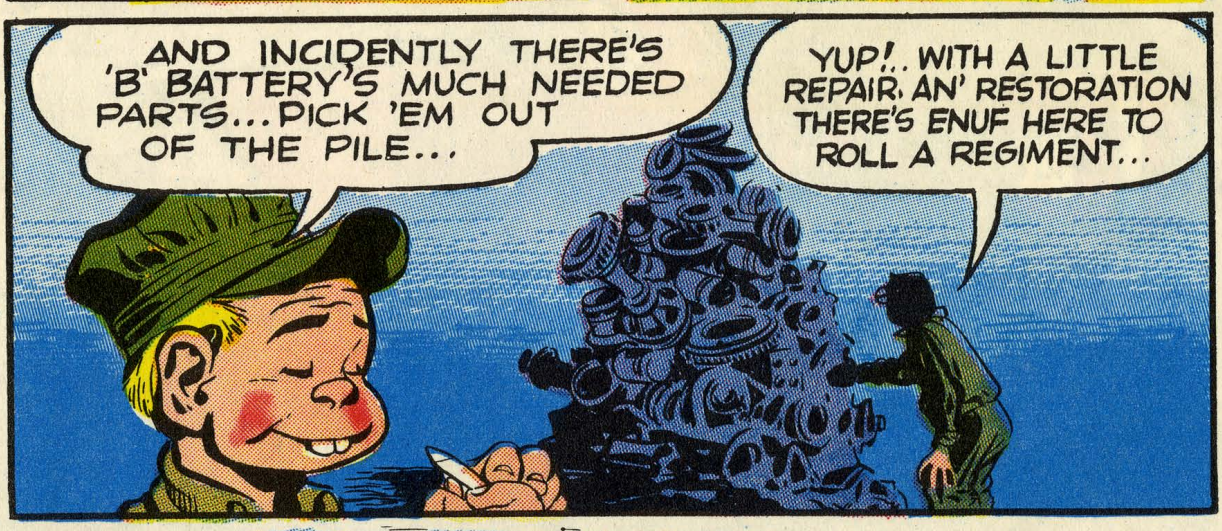
Nothing escapes his careful scrutiny . . . No major component or part thereof is spared a study.

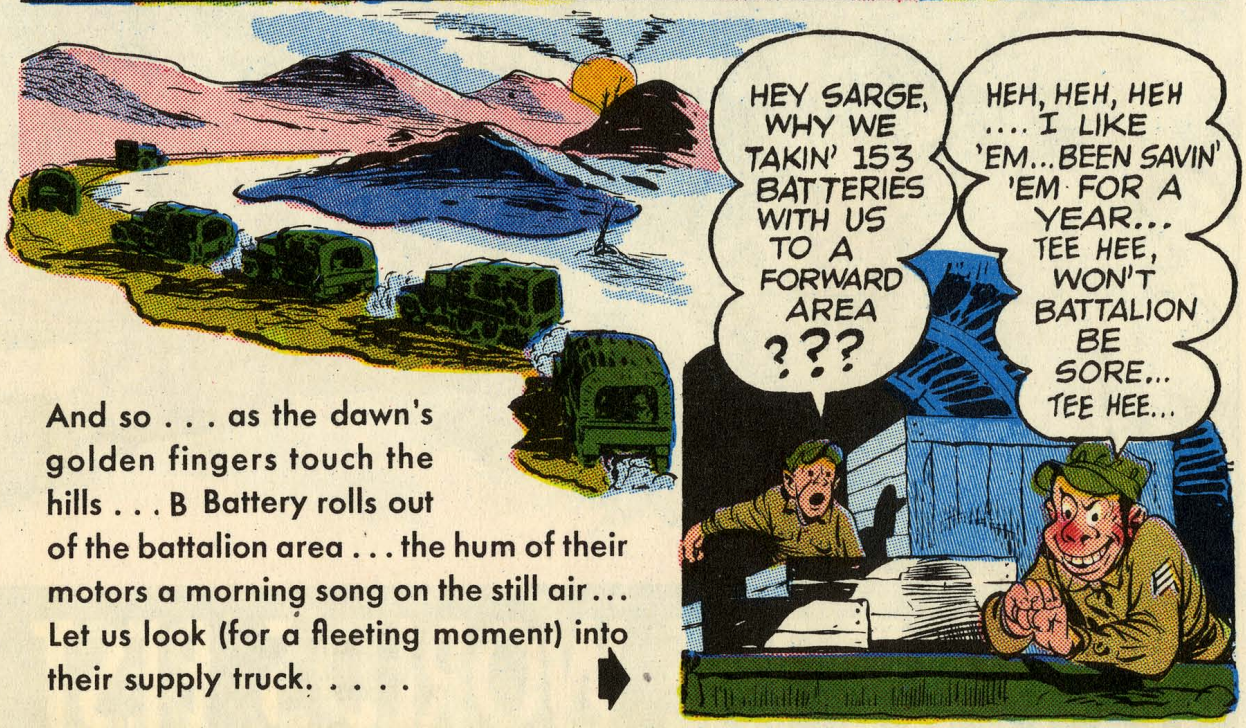


Only those parts that are shiny-new remain. The rest go.

Naturally his parts requisitioning is very considerable . . .







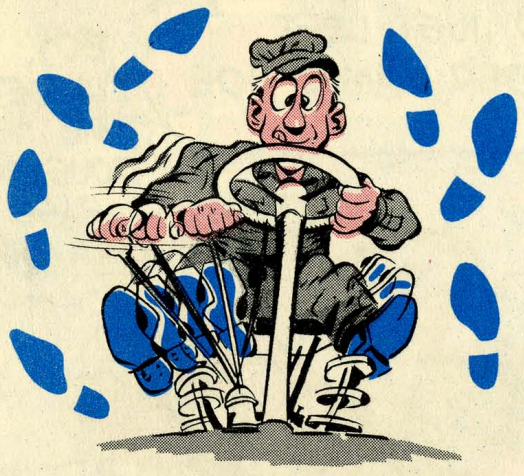
And so . . . as the dawn's golden fingers touch the hills . . . B Battery rolls out of the battalion area . . . the hum of their motors a morning song on the still air . . . Let us look (for a fleeting moment) into their supply truck. . . . .

JOE'S
Dope Sheet
WHY, SERGEANT O'TOOLE, ARE YOU LOW ...WHEN WITHOUT VITAL PARTS WE MUST GO?
COFFEE
WILDER
WE HAVE THE WORLD'S BEST EQ

JOE'S
Dope Sheet
WHY, SERGEANT O'TOOLE, ARE YOU LOW ...WHEN WITHOUT VITAL PARTS WE MUST GO?
OF SPARE PARTS I'M BEREFT, 'CAUSE THE GUY WHO JUST LEFT IS THAT NOTORIOUS HOARDER NAMED JOE
SUPPL
BOY, I'LL GET ME A "DOUBLE-A" PASS OUTA THIS,
WE HAVE THE WORLD'S BEST EQUIPMENT.. Take care of it

OF SPARE PARTS I'M BEREFT,
'CAUSE THE GUY WHO JUST LEFT
IS THAT NOTORIOUS HOARDER NAMED JOE
BOY, I'LL GET ME A "DOUBLE-A" PASS OUTA THIS,
SUPPLI
QUIPMENT..Take care of it

SHIFTY FOOTWORK



Lots of people are meeting heavy floor-shift transmissions for the first time in the cab of a military truck. Progress is wonderful, but since the Synchro-Mesh transmission with steering-column shift-lever, and the new automatic transmissions have become standard for pleasure cars, many of us have had no chance to learn the little tricks required to shift a big transmission quietly and effectively.

The old Buzzards will now take five, while the rest of us talk about what makes a "Deuce and a half" growl at you when you shift her gears.

To be sure we all understand what a transmission does for a truck, let's just for example take a look at the Permissible Road Speeds plate in a GMC* 2-1/2-ton for a minute. We see that with a maximum engine-speed of 2700-rpm, we are allowed 45-mph in overdrive but only 6-mph in first.

*Nothing in this article applies in any way to the GMC Hydramatic M135 truck.

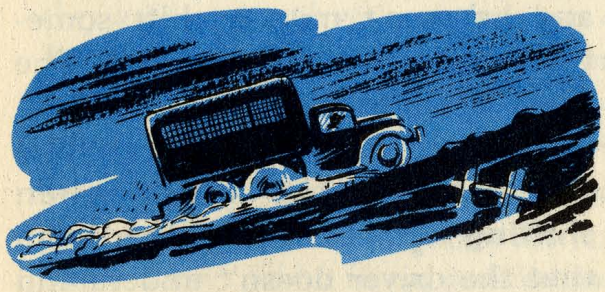
Obviously, the gears are so made that a fixed engine-speed will give us a different road-speed in each gear—the other side of this coin is that a fixed road-speed will require different engine-speeds for each gear.

Simple, isn't it? But right there is the secret of good gear-shifting. **With a fixed road-speed, each gear calls for a different engine-speed.** Let's explore the inside of a transmission and see why.

In the transmission, we find a number of gears, each with a different number of teeth, revolving on shafts. The gearshift lever slides first one set of gears and then another into mesh. When we have set the speeds of these gears so that the same number of teeth per second are passing a given point, they will slip together nice and easy. **But,** if we have lots of teeth on one gear trying to go by, while only a few go by on the other, we get a roar of agony from the transmission—echoed by a roar of agony from the Motor Sergeant who has to find a replacement. So we use our throttle and our clutch to synchronize the teeth on the gears before they mesh. On our pleasure cars the Synchro-Mesh thinks for us, but truck transmissions depend on the driver using his noggin.

Let's run through the gears once: Starting out, we accelerate our engine and ease our clutch out to take off (generally in second unless we are on a hill or heavy-

loaded). As our speed approaches the posted limit for the gear we are using, we depress the clutch pedal, shift to neutral, engage the clutch briefly with our foot **off** the accelerator, depress the clutch again, shift to the next higher gear, and engage the clutch once more, opening the foot throttle as we do so. The purpose of the "double-clutch" on an up-shift is to use the engine drag to **slow down** the drive gears in the transmission; therefore, we do **not** hit the gas between shifts. (It is possible to up-shift quietly without double-clutching by waiting for the gears to slow down by themselves, but it is slow, and sacrifices some of the forward speed of the truck.) Doing it the smart way, we go up through the gears, double-clutching, and proceed on our errand.



When we come to an upgrade, particularly if running in over-drive or top gear, we feel our speed fall off and see the speedometer hand fall back. Now we all know it's bad for an engine to lug it down, so as soon as our speed has fallen a little **below** the posted top-speed for the next lower gear, we down-shift to that gear.

Down-shifting is done in the same manner as up-shifting, with one vital difference: We want to synchronize the gears by **speeding-up** the drive-gears in the transmission. Are you ready? We depress our clutch, shift to neutral,

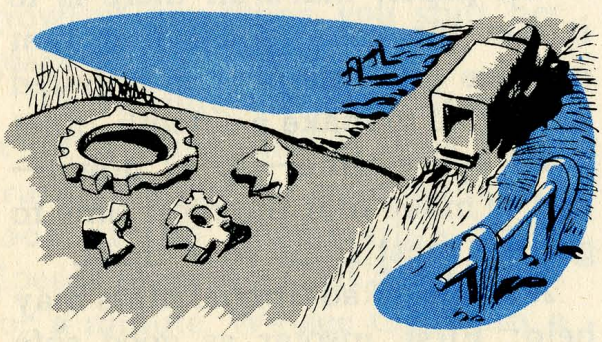
engage the clutch, and then hit the accelerator to bring the engine and drive-gear speed up for a quiet shift. (We've all heard that little burst of exhaust when a good trucker shifts a big truck on a hill.) Remember that for the same road-speed, a lower gear ratio calls for a higher engine-speed. We then depress the clutch again and finish our down-shift to the next lower gear, releasing our clutch and opening the foot throttle as before to continue up the hill.

On paper, that's all there is to it. On the road, you'll find that practice and lots of it is required to be able to make a smooth, quiet shift every time—up or down—and to make it at the right time to get the most from your truck.

A couple of additional hints may help: First, insofar as good safe driving allows, keep the speed on your truck. Approach your hills at a good clip, and shift soon enough and often enough to keep your engine turning in the top half of

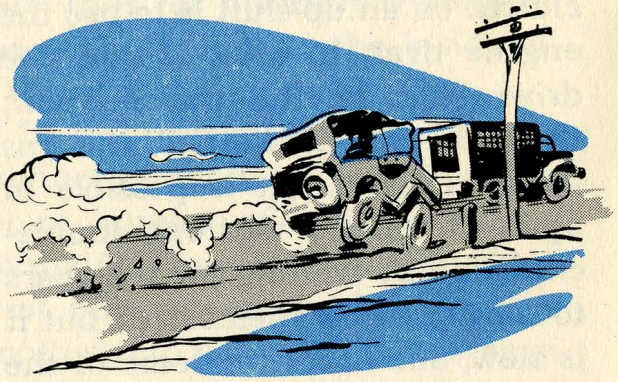
its speed range. You gotta have RPM's if you want horsepower. Lugging down too far in any gear may require extra and unnecessary shifting to still lower gears. Just as soon as Betsy falls below the posted top-speed for the next lower gear, get down into it. It is poor driving, and downright embarrassing to have to stop dead in the middle of a hill—dangerous, too.

When you've found the gear that'll take you over the hill, don't be too eager to shift back up. It is better to slack off on your throttle a little—to prevent racing your engine—and wait till you're over the crest before shifting, than to shift too soon and have to shift back down again. If you don't synchronize just right the first try, you can snap your clutch out while still in neutral to give your gears more speed if needed. You can also wait for them to slow down to meshing speed, feeling them out by way of the gear-shift lever. Gears is gears.



Let's don't give a mighty heave and force them in—you'll lose your teeth.

When approaching a down-hill, slow down at the top and make a down-shift **before** entering the grade. Go down two or three gears if heavy-loaded. Then you can use your brakes lightly and intermittently, which will get you down to the bottom without racing your engine and without overheating your brakes. (You get the funniest feeling, sick-like, if you run out of brakes before you run out of hill.)



A driver who uses each necessary shift of gears as a chance to practice a smooth professional shift will soon find he is darn good, and he won't miss a shift sometime when it counts heavy. The most common error in double-clutch driving is hitting the gas between the shifts when **shifting up.** This is a sure sign that the driver doesn't understand why he should use this kind of shift, or what he is trying to do.

When you are given one of the new vehicles, say the M34 2-1/2-ton Reo, you'll find that it has a Synchro-Mesh transmission. However, if you continue to use correct double-clutch technique, that new transmission will last longer than if you make the bronze synchronizing-rings do your thinking.

OBSOLETE DIRECTIVES

Dear Half-Mast,

Remember back there in the old Army they used jeeps aplenty and there was a TM that gave adjustments on the 1/4-ton 4x4 carburetor metering rod. If I'm not mistaken the adjustment was made right along with the axle, end-play, etc., at 6000 mile check. I've forgotten the setting and can't find it in any publications on hand. What was that old TM?

Also, there was a floor plan in the TM for a 2-1/2-ton 6x6 for setting up a shop truck complete with super-structure (this was about 1941 to 1944).

WO P. M. D.

Dear WO P. M. D.,

Lots of things happened in "the old army" that best be forgotten . . . among them, obsolete directives. Assuming your 1/4-ton 4x4 to be a Willys-Overland or Ford GPW Jeep, TM 9-803, Feb 44, mentions no RPM spec for carburetor adjustment except for the idle-screw which should be 600 revolutions (8-mph). No other carburetor adjustments are made in the 6000 mile check. When interior adjustments are needed, the defective carburetor is replaced and the old one sent to a special shop to be rebuilt.

TB 9-819-2 and the TB ORD 444 series shows layouts for installing organizational maintenance set #2 in the 2-1/2-ton, 6x6, M34 truck. People are using these layouts as a guide and including second echelon set #7 (superstructure) and mounting both on the GMC CCKW-353 6x6 cargo truck. This is new dope for the new equipment. Most things as far back as 1941-1944 are obsolete.

Half-Mast

FIFTH-WHEEL LUBING

Dear Half-Mast,

Air Force mechanics at every base I've been stationed argue with me about the amount of grease that goes on the fifth-wheel of truck-tractors (any make or model). I say that a thin film of lubricant on the table proper, and a heavier coat on the troughs is all that's needed. Mechanics disagree. Our trucks come back from preventive-line-maintenance with the fifth-wheels heavily greased fore and aft, abaft and abeam. The first trailer that's backed under 'em sends grease splashing all over the rear deck—on the air hoses and on the light cables.

Seems to me that the upper fifth-wheel plate on the trailer gets enough grease to make up for any smooth spots on the lower plate.

Can you settle this debate?

Sgt R. E. H.

Dear Sgt R. E. H.,

There ain't nothin' to debate, Sarge, you are so right, so right. Tell those mechanics to read any TM—that'll hold 'em.

Half-Mast

M135 DIPSTICK vs BATTERY

Dear Half-Mast,

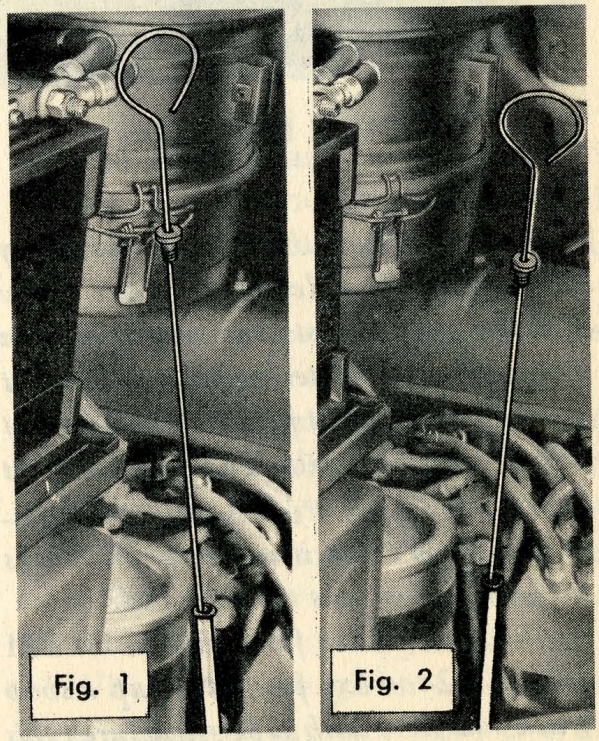
When checking the engine oil in our M135's, the dipstick contacts the positive battery terminal (Fig 1). It's not only a fire hazard but it has caused some darned good burns on the fellows doing the checking. We solved the problem by slipping a piece of windshield wiper hose, 8¼" long, over the handle.

H. H. P., OCT

Dear Mr. H. H. P.,

You've got an idea, but try this for size. As was said in PS #7, page 283, you'll notice a slight crook in the dipstick guide-tube and a locknut where the tube enters the pan; loosen the locknut and turn the tube so the crook is facing the front of the engine; tighten the locknut. This will throw the dipstick in the other direction and away from your battery (Fig 2). If you still don't have enough clearance you can bend or arc (easy does it) the guide tube toward the front of the engine. Changing the position of the distributor body may be necessary in some cases.

Half-Mast



Position in life is everything — making a big difference to the M135's dipstick guide-tube.

COMPRESSION TUBE TROUBLE

Dear Half-Mast,

We're having a bit of trouble with the M34 compression tube and would appre-

ciate it if you'd advise us whether or not you've encountered any difficulty with the bronze nuts cracking on the tube (both from the water pump and the air compression fittings).

Lt Col G. W.

Dear Colonel, Sir,

You're not alone in the trouble you're having with the M34 compression tube. We've had other scattered reports of the bronze nuts cracking, and two reasons have been suggested.

Maybe these nuts are being tightened too much. The fittings on the air compressor are a flexible type to reduce the effects of vibration and you don't have to apply excessive torque to get a good seal. When the nuts are tightened too much and are bottomed, the nuts will split. Or possibly the hold down clips have worked loose, letting the tubes vibrate. Even though the tube passes through the clip, it still may not be tight enough to stop vibration.

Half-Mast

SOLDERING YOUR ROTORS

Dear Half-Mast,

I disagree with your OK on PFC J. B's idea in June, 51,PS of using solder to build up the brass contact end of the rotor. Solder is pretty soft and I don't believe it would take the heat. Getting right down to it, I believe that a hands-off policy would be a better PM procedure.

MSgt L. L. P.

Dear Sgt L. L. P.,

You're right, hands off policy is good PM procedure for rotors . . . hands off cleaning them with a file or stone (use steel wool lightly). Rotors get shortened from mistreatment, they don't wear short. But if some misinformed joe filed your rotor to a nub, and for lack of a new one you're forced to use a makeshift method to build it up, solder will do the trick. As for the heat, this is a secondary circuit and the heat is negligible. So in a pinch, Sarge, the solder method, as an expedient, will work.

Half-Mast

WHITTLIN' SCREWDRIVERS

Dear Half-Mast,

I am the acting motor sergeant for the 1st Ambulance platoon, 115 Medical Battalion, Honshu, Japan, and I get a lot of helpful ideas for my job from PS Magazine. Here's a trick I'd like to pass along.

It seems to me that the General Mechanics' Tool-Set is missing a very important screwdriver. The sizes jump from the 5-1/2" electrical to the 10" heavy-duty screwdriver. I seldom use either one of these, but I sure need a screwdriver that's in between these two sizes. Sets usually have more of the recessed or Phillips-type screwdrivers than a man can use, so I grind down the Phillips #3 to make the missing, and most needed one in my set.

Cpl D. M. T.

Dear Cpl D. M. T.,

Please take another tip from PS and leave the whittling to your buddies in the clinic. Being forced to whittle your Phillips #3 to get the size screwdriver you need, makes me wonder if maybe you have an incomplete (or perhaps wrong) mechanics' tool set.

If the eight screwdrivers in the Gen-

eral Mechanics' Tool Set (Ord 6, SNL J-10, section 4, page 5) don't cover your requirements and you can show need for added screwdrivers—your CO can requisition what you lack. And also, do you know that unwanted, unneeded stuff can be turned in through supply channels?

Half-Mast

NEW TYPE CHROME FINISH

Dear Half-Mast,

Last month you wrote a guy about getting rust off chrome. Wouldn't it be better to keep it off? And shouldn't it be said there are chromes and chromes? Some chromes are so thin most anything will scratch them and you couldn't give a buddy a push—the chrome would strip off the bumper.

J. E. C.

Dear J. E. C.,

You're sure right about one thing—chrome ain't what it used to be. The new type chrome finish on administrative vehicles is not only thinner, but is spread right over the copper and then protected with a coat of varnish. But that doesn't take the place of the nickel plate that used to be put on the copper before applying the chrome. If you have the slightest suspicion that some of your vehicles have the new type chrome, don't take any chances with it. Get yourself a copy of the new TB ORD 466. Till you get the TB, you can follow these two rules for safety—avoid anything even slightly abrasive on the new chrome and keep it waxed with paste wax.

Half-Mast

SNL TROUBLES

Dear Half-Mast,

I don't know if anyone else has been having trouble with ORD 7 SNL G-508 (August 51) but I did and I have found out that you'll have to go back to the old G-508 to get what you order.

For instance group 0401, line 4, G 501-7538002, muffler w/spark arrester assy for CCKW 353—the item received looked more like a hot water boiler.

Also, in group 1206, line 6, G 508-7373563, pedal, brake, w/bearing assy. I later found by using manufacturer's part number from ORD 9 SNL G-508 this item is for the GMC truck AFKWX-353.

Could you tell me if there has been something left out by the printer or should I get myself a new pair of glasses?

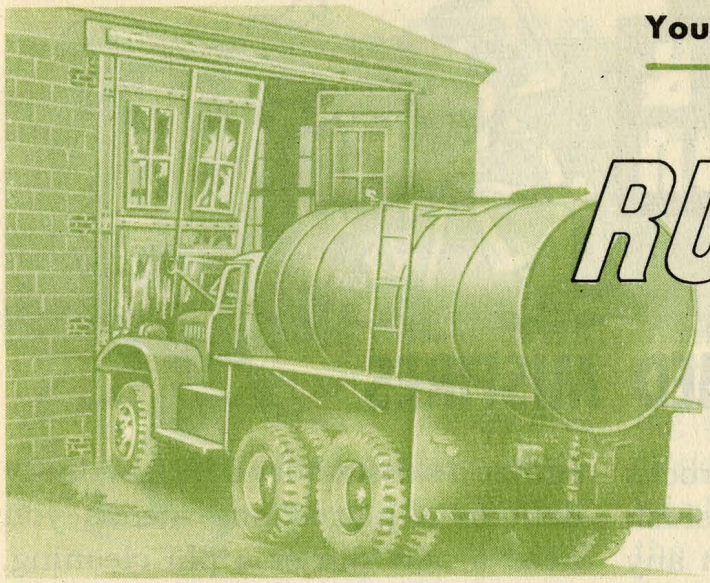
WOJG C. F. C.

Dear WOJG C. F. C.,

On the first item, line 4 in group 0401 is just as you described it and you should have received G 501-7538002, muffler w/spark arrester assy for GMC CCKW 353. Anything could have happened to cause a physical mix-up. Did you try requisitioning a second time?

As for the second item, perhaps the new glasses would be in order—or at least a few sheets of 58-P-14060 (ORD 3 SNL K-1). You did slip a cog on that one. Line 6 in group 1206 in the new ORD 7 SNL G-508 (August 1951) is not the brake pedal you described at all. You were reading line 7. So maybe it's just a matter of getting used to the new SNL and by now you've had time to get better acquainted.

Half-Mast



You Might Be The Next Man

To Chase A...

RUNAWAY VEHICLE

For a vehicle whose parking brakes were tightly set, this runaway water tanker did a pretty good job of crashing into those doors and splintering them all to you know what. Which only goes to show, children, that the handbrake is not a complete safeguard when parking your vehicles. No, the good old reliable handbrake offers at least two possibilities for slipping. At the **drum,** or at the pawl-and-sector.

Ask the insurance companies — they pay out plenty of mazooma each year because of civilian vehicles joyriding without drivers. And almost all the runaways that witnesses checked promptly either had their handbrakes set, or apparently had had them set before some mechanical failure or accident allowed them to snap off.

But whatcha gonna do if you can't trust your handbrakes? How's a fella gonna be sure when he leaves his truck parked at the **top** of a hill that he won't maybe find it down at the **bottom** of the hill, when he comes back?

Well, for one thing, the driver's manual says not to choose a steep grade for a parking place unless it's absolutely necessary. But if you have to, and you're headed downhill, turn the wheels toward, but not in actual contact with, the curb. (If there is a curb.) If the vehicle is headed uphill, turn the front wheels away from the curb, so the **rear part** of the front wheels is toward the curb, but not in direct contact. Even then, we all know that a sharp bump can sometimes straighten a cramped wheel and start the vehicle on its unhappy way downgrade.

The book doesn't recommend leaving a parked vehicle in gear because of the chance of mechanical damage in case it's bumped. But it's far safer to drop it into a low gear after the parking brake is set than to have it roll away while you're gathering rocks to chock the wheels.

When there's enough space at the side of the road it may be practicable to park the vehicle at a right angle to the grade. But, of course, not if the grade is steep enough to strain or even overturn the vehicle.

All else failing—you'll just have to sit still, and keep your foot on the brakes!

ARMAMENT & AMMUNITION

Faulty Ammo...? No!

999 are MISBLAMED MISFIRES

From the hills and dales and rocks and vales—from the mushy slush and muddy ruts—in fact from any old place where men miss women and mortars mis-fire comes the battle cry of misfiring mortar men: **"Faulty ammunition."**

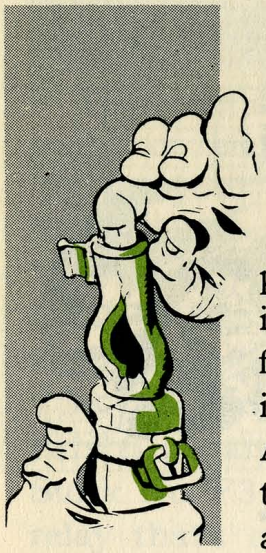
But the guys what know and love those stunted rain spouts report: "Out of a thousand shells that plop into a tube and just sit, 999 of 'em misfired for other reasons than faulty ammo."

The best of these "other reasons" is an **unsatisfactory firing pin.** All ammo, good or bad, needs a pin-point of encouragement before it'll go anyplace; and a pin that's not up to the job is either **fouled, loosely screwed** into the base plug so it backs off, or **worn** till it can't rise above its bushing. A good check for pin failure if you don't have a gage (or can't make one like it says in TM 9-1260), is to get a stick with putty or wax on the end (or just a plain soft stick) and press it down on the pin. If it's good you'll get a smooth dent, almost 1/16″ deep (by now you've seen enough of these things to recognize a satisfactory dent.) A dinky dent or a jagged one means you need a new pin or a pin cleaning.

The big beef of these maintenance boys is mortar tubes that have collected more trash than a hall closet. Dirt, oil and water will crummy up the inside of your tube, and the shell slides too sluggishly to explode even if it does hit the pin. You could even have left-over fins or primers in the tube.

If you misfire anyway, **Stop . . . Look** (away from the tube)...and **Listen** (for at least a minute or more) to make sure that shell isn't just taking a breather. Then grab your favorite FM and follow the directions for removing the shell. This last is an uncomfortable bit of business, and it's sure the hard way to find out you shoulda checked and serviced regularly.

'Course it could happen that you'll misfire because of faulty ammunition—but it's not likely. There's no denying your girl thinks you're one in a million, but when it comes to misfiring mortars, the odds are 999 against you even being that one in a thousand.



OPERATION BUST

FOR RIFLES WITH A HOLE IN THEIR BARRELS

The kid who plugged up the hole in the Dam with his finger had the right idea...for dams. Acting like a bathtub stopper he ups and saves Holland from an annoying flood of moisture and humidity which could have suffocated the whole town.

But if Holland had been a tunnel (of the same name) with only one opening, things would'a been different. For one—the kid would have needed a bigger finger. For two—he wouldn't have kept the tunnel dry, or even stiffled it. He would of sweated it up...and sweat means rust...and rust is bad.

For three—if a car that was burning gas came shooting down that clogged up tunnel, the whole thing would'a been a bust. No place for the car to go, much less the gas. And the light in the little hero's eyes would have been gas light.

Enough with the bed time stories! **This is what happens in your gun when you shoot it with obstructions in the barrel! See! So get the stuff (fingers, cleaning patches, dirt or whatever) out'a there. See!**

CONTACTOR LATCH ASSEMBLY STANDARDIZED

It may be a contact wire to a rocket, but to many a gunner it's a stab in the back—or the chest—or wherever its unpredictable flight might take it when it whips around after the rocket is fired. Now, according to the latest juice from the grapevine, this little prankster is scheduled to be eliminated.

The Contactor Latch Assembly for the 3.5 inch M20 and M20B1 Rocket Launchers has been standardized. With the addition of the Contactor latch assembly, the M20 and M20B1 Launchers are designated the M20A1 and M20A1B1 Launchers, respectively. The latch allows loading of the rocket to a definite stop—makes contact when the lever is engaged, and opens the circuit automatically after the rocket is fired. With the new latch mechanism there'll be faster loading and firing, and the launcherman will be able to place aimed shots on the target.

Wheels have started turning to get the Contactor Latch Assembly in production, and there'll be field modifications available for all existing launchers, which PS hopes to tell you all about later.

FIRE CONTROL

MAKING ENDS MEET

Many's the time a unit's removed from an assembly and shipped to storage with part of its connecting ends left hanging on the main assembly. Not knowing what goes with what, is the usual reason for the oversight. But wha' hoppens—? The units are reissued with the parts missing and there's a run on spares often hard to get, or you try making them locally and find it an expensive and highly technical proposition. Here're a few tips on the odd-ends that shouldn't be overlooked if the surgery's to be a success.

If it's a Periscope Mount you're taking off a vehicle, take the cover assembly off first, then the upper and lower connector assemblies, connector link, headrest assembly, and in some cases, the locking mechanism. When you've got those off, put them back on the dismounted mount 'cause the parts may be machined or selected for it.

The link assembly on Telescope Mount, M44, should go with the mount when it's taken off the weapon. A mounting bracket is bolted to the right side of the howitzer turret and is the mount's support. Some men are separating the mount from the bracket by removing the cotter pin and nut, leaving the bracket attached to the vehicle. It's an important part of the mount and easy to take with the mount by removing four screws and two dowel pins.

Telescope Mounts M55, M56, M57, M64, and M72, have a headrest assembly physically separate from the mount but considered part of it. Take the headrest with you when removing the mount and bundle 'em together for future use.

An easy one to fumble is Telescope Mount, M65. There's a "front mounting bracket" way up in the front part of the turret and it's part of the mount. It's often forgotten when the main part of the mount's stored away.

M33 RELAY TESTS

To make a test case out of a couple of relays that may be fouling up your M33, use Hickock Model 536 or WECO Model KS-5727 which you'll find listed in ORD 6, Test Equipment, for Fire Control Systems, AA, M33 and T38. The relays you're spotting this time are No. BA-718422, Stock No. F342-7601839 (a tube relay that's normally closed and used in the Acquisition Modulator Meter Panel on early M33 Systems 1 thru 131), and No. BA-701727, Stock No. F342-7603040 (also a tube relay but normally open and used in the Track R. F. Unit of later M33's from 132 up).

When you're testing the earlier models, first throw the power switch to "OFF" and set up your tester. Plug the line cord of the tube checker into the 110 volt-60 cycle outlet, set your selector switches to BT-5800-0, and turn the filament switch to 3 volts and the short-switch to No. 4. Now put the tube in the socket and throw the power switch to "ON". If the neon short-indicator lamp glows for about two seconds the relay should be OK.

The later models get the same treatment except that the filament switch should be on 117 volts, and you'll find the indicator lamp will glow continuously after about 5 seconds if the relay's working fine.

LENS CARE

With the walloping sun striking down on your instruments, it isn't long before the optical lenses begin to split. Many of these lenses are a multiple-type affair where two or more are cemented together for special effect, and heat from the sun's rays can cause the cement to break. This is particularly true of lenses cemented with Canada Balsam—a common adhesive that's often used.

To the sun's direct force, the lenses themselves add to the problem by concentrating the heat as the rays go through. It's a fact that instruments should be in a shaded place between uses, and in their cases at that.

As for dirt—think twice before taking an instrument apart to clean the lenses. Take binoculars, f'rinstance—you'd never get them back together again. It takes some knowing, and a rigged-up target to set the collimation—unless you've got both, you're on a limb. Anyway, you can't always be sure where the dirt is—you maybe think it's on the objective lens when it's really on the eyepiece, or etcetera. Your inexperience could turn a small job into a big mess. So pass-the-buck, and let the Ordnance repairman clean them for you.

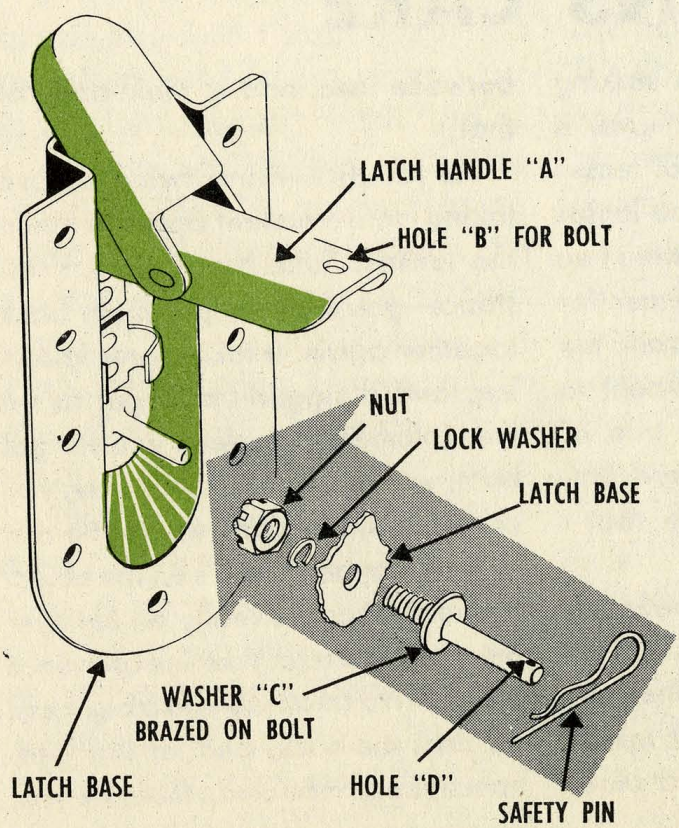
ARMY AIRCRAFT

COWL FASTENER SAFETY-LOCK

Seems our pilots are claiming that low altitude over enemy lines is not a good place for L-19 cowlings to flap around like a hound's ears. Which sounds reasonable.

Shown below is a little gismo the boys of the 79th Ord Bn are putting on their L-19 cowl latches to take care of the complaint. The engineers are not convinced that it's necessary, but agree that it can do no harm—and if nothing else, it'll prove the latch is closed correctly.

So if your cowlings are waving in the breeze, try this. One on each side, front or rear, ought to be enough.



● —Drill 5/16" diameter hole "B" through latch handle "A" while latch handle is in closed position. In same operation, drill hole in latch base so that when bolt is placed in latch-base hole, the bolt and the latch-handle hole will be in line.

● —Use a 1/4" diameter aircraft bolt—approximately 1-1/2" long—and saw off bolt head.

● —Braze washer "C" in place on bolt at end of threaded portion, as shown.

● — Insert threaded portion into latch-base hole and tighten in place with nut and lock washer.

● —Close latch handle—shorten bolt if necessary.

● —Drill hole "D" for safety pin.

● —Make safety pin from welding rod.

Because it CAN happen—

PLAY IT SAFE

Ground check controls. We know that no smart pilot ever takes off without checking his controls at least by moving them. The smarter boys also look to see that the control surfaces move freely. Now comes proof that the real smart boys take the extra second needed to be sure that the controls actually move in the right directions as well as moving freely. One chance in a million, but it **did** happen: A ship got into the air with controls wrongly connected after a major rebuild. Pilot found himself in the same position as a kid trying to ride a bike with his arms crossed in front of him. Operations officer found himself short one aircraft, (complete w/pilot).

Check the fuel. Like it sed in Major Light's story (PS #9), there has been a good deal of trouble lately from contaminated fuel—coupla crashes in fact. Watch it like a hawk, and if you find false teeth and broken thundermugs in your fuel filters, go a step beyond cleaning out the tank—have a look at the servicing trailer too .

How to correct your TO

Oil Pressure Relief-Valve

To get the valve you need when you need it, delete the following parts numbers from Air Force TO AN 02A-40EA-4 (15 Jan 52):

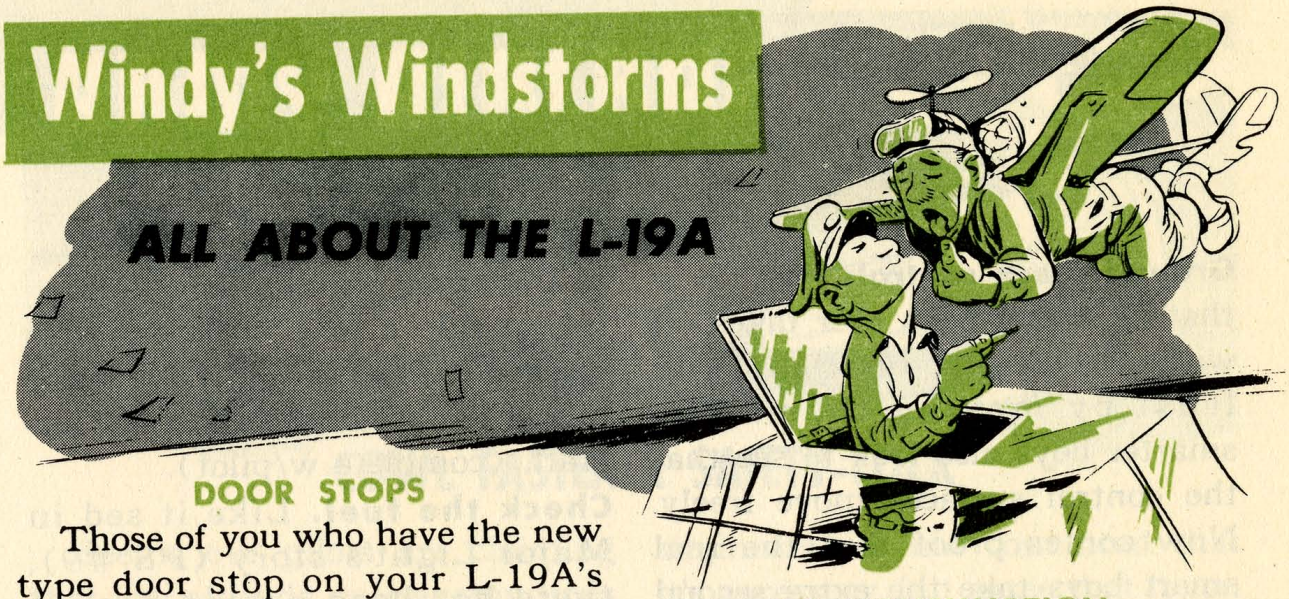
Spring, oil pressure relief valve, P/N 532463
Plunger, oil pressure relief valve, P/N 532397
Screw, oil pressure relief valve, adjusting, P/N 532410
(now shown as 53410 in the TO)

The parts numbers for the 0-470-11 engine oil pressure relief valve are:

Spring, oil pressure relief valve, inner, P/N 533105
Spring, oil pressure relief valve, outer, P/N 533106
Screw, oil pressure relief valve, adjusting, P/N 533166
Plunger, oil pressure relief valve, P/N 533103
Sleeve, oil pressure relief valve, P/N 533104

Windy's Windstorms

ALL ABOUT THE L-19A



DOOR STOPS

Those of you who have the new type door stop on your L-19A's (the clip with two rubber bumpers mounted on the strut step strap) will be happy to know that rubber hood bumpers, which you can get from the motor pool, will fit into these holes. These automotive bumpers will not only serve as replacements but being larger and thicker with flat ends, they will do a better job.

FUEL TANKS

Lots of leaking fuel tanks have been reported. Inspect yours, with particular attention to the fore-and-aft hold-down straps (take the tank cover off) and replace any broken or bent parts, tighten loose straps, etc. Keep an eye on these tanks.

OIL FILLER CAPS

Oil filler caps are still getting away, sometimes resulting in loss of oil. Replace with great care when servicing the ship. A new cap with positive safety features is in the mill.

OIL CONSUMPTION

Excessive oil consumption is reported on lots of L-19A's, mostly from FECOM. Turn in UR's on these. And as Windy said last month, **keep your air filters clean and oiled.**

TIRE WEAR

There has been some confusion as to the wedges on the L-19A landing gears. See TO 01-125CAA-2, Par. 4229-A to 4229-D for the correct info.

WING HEAVINESS

At least one of the mysterious cases of wing-heaviness has finally been run down. A slight bend on the rudder was found to be causing all the trouble. Rudder trim tab was enough to correct it. (How do yours look?)

'CHUTE HARNESS

Pilots flying L-19A's can save the crew chief a lot of grief if they make a habit of fastening their safety-belt and 'chute harness **be-**

fore closing the door. When deplaning, be sure the left half of the safety-belt and the 'chute leg straps are on the seat before closing the door. Prevents catching them in the door and springing it. (An unsprung door will keep you warmer on cold days, too.)

TAILWHEEL BOLTS

Tailwheel spring attaching bolts are now supposed to be torqued to 160-190 inch pounds on the L-19A's. Thought everybody knew that.

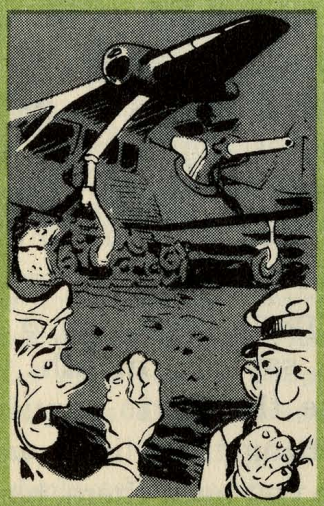
FLAP HAPPY?

Flaps on these aircraft have been giving trouble. Pilots are warned not to lower flaps at speeds above 100 miles per hour. If you have any troubles with your flaps fill out a UR, and give speed, turbulence, etc. to help locate the troubles. These flaps are now being studied in hopes of correcting the difficulty.

MAT MOORING-HOOK

If you are operating off a perforated-mat runway, or are mooring your ship on such a mat, the hook shown below will prove handy.

Slip the hook through two adjacent holes in the mat and then run the 1/4" plate-keeper down over the end of it. Tie mooring rope to the eye, or splice it in.



GOT TROUBLES, BUD?

Windy can't solve **all** your problems—but try him on aircraft troubles. He's an authority on anything that flies. But he can't help you with **any** problem unless you tell him what's on your mind. If you got a gripe, gimmick, field fix, or even only a wild idea about Army aircraft—don't hoard it. Drop a line to M Sgt Windy Windsock, c/o PS Magazine, Aberdeen Proving Ground, Maryland.

SUPPLY & DIRECTIVES

SWITCHABLE PARTS

The story on finding out new vehicles' parts interchangeability is much the same as it's been for all vehicles—only you'll have to use the new cross-reference lists (Ord 5-4 and 5-5 series) that are just rolling off the press and will show the new vehicle parts.

For the benefit of those who haven't had a tussle or two with the ORD 5-4 and 5-5 series, you have to have one of 3 numbers to start with. If you have the manufacturer's number or the drawing number (your supply man can help you with this one) you can look in your Ord 5-4 series for the stock number. Under the stock number, the Ord 5-5 series will list the Supply Catalogs the part appears in—this way you'll know which vehicles use the part.

Of course, if you have the stock number to start with, you're ahead of the game—you'll only need your Ord 5-5.

PM REPORTS

PM Reports have other uses than to create an impression for IG inspection purposes.

Latest cook-house official has it that these preventive maintenance services are too often of the pencil-and-paper variety, and that the vehicle doesn't always follow thru on the report.

PS has pointed out the mechanical points of filling out the forms (WD form 48 and WD AGO form 460)—it's been suggested that the using units spot check their own vehicles against the reports to be sure they reflect what's on paper.

Time studies could be made, too, on the basis of the info in these reports, and used by your unit to plan your workload. Also, by reviewing the parts used over a period of time, say one month, you can estimate the parts required and start getting them in a week or two before you need them, based on scheduled maintenance.

NO TIRE SHORTAGE

It just looks that way when it takes so long for your requisitioned tires to be shipped. The present general depots won't "retail" small items, so your requisition waits till there's a carload of something coming your way.

Soon as the new "area depots" are set up to stock these fast-moving items, and the "back-up depots" to stock the slower moving things, much time will be saved between asking and getting—stocks will be closer to you, less paperwork will be involved. In the meantime, look ahead to your needs—especially on fast-moving items.

In the case of tires—don't expect them all to be bouncing new because they'll probably be a mixture of new, retreads, and good used ones. The best you can do (in the ZI) is to be sure they're matched before they go on your vehicles. These tires with 50% or more tread left on them have to be used—not because there's a shortage, but for the sake of economy. **However,** they could cause more damage than the savings involved if care isn't taken to make sure the same amount of tread remains on those being used together.

TM-31-200, Pneumatic Tires and Rubber Treads, tells exactly how to match tires. If you don't get them within an inch (at most) of the same circumference measurement at the center of the tread, you're in trouble. Not only will you be scuffing tires every inch of a mile, but your differential won't take the extra wear—it isn't built for it. Lacking the prescribed steel tape to do the measuring is no excuse. A piece of string will do the job—plus a head.

IDENTIFICATION BOARD FOR COMMON PARTS

All of you stock room men know how exasperating it is when someone comes up to your door with his fingers held like a caliper and says,"Hey,you gotta bolt about this long?"

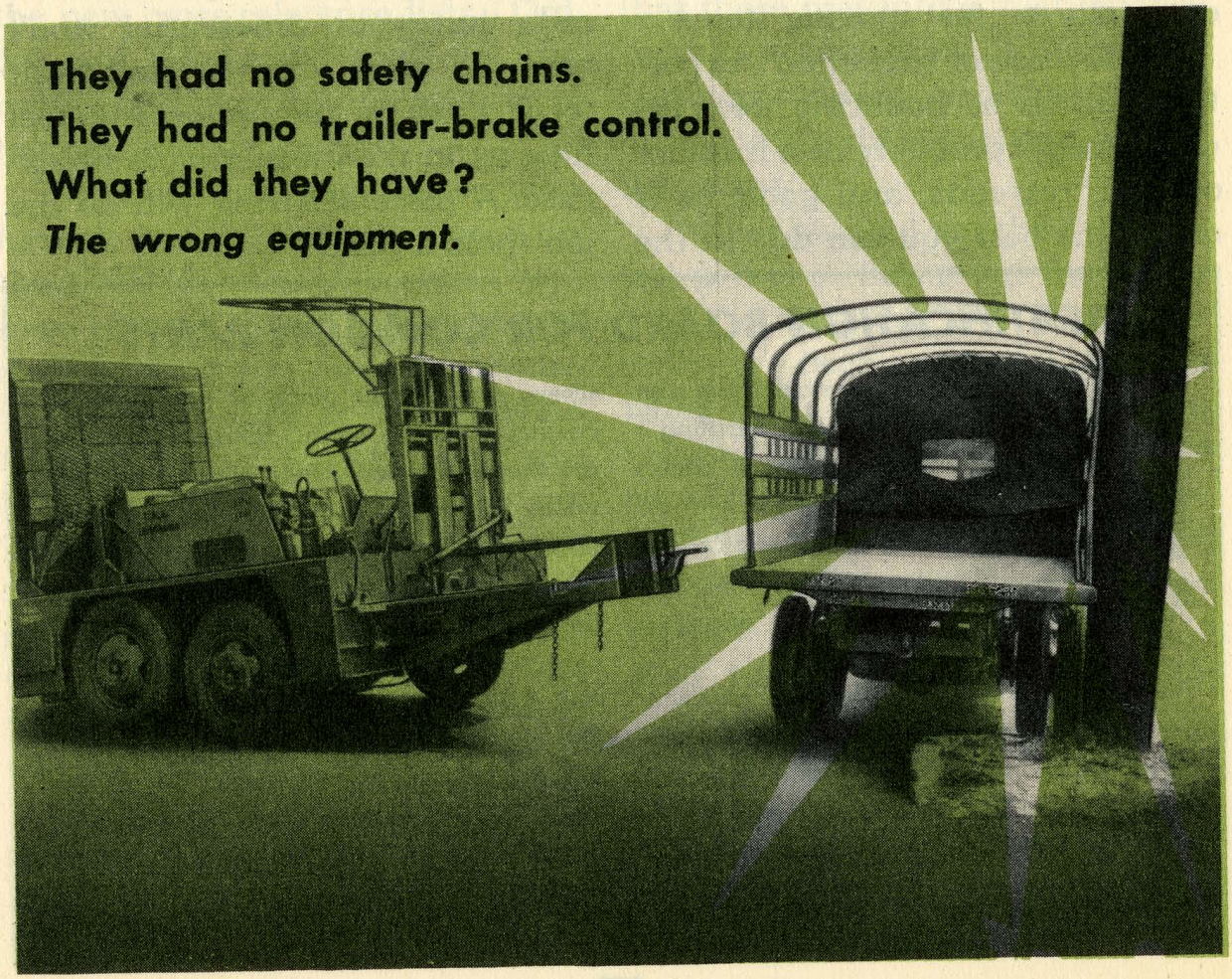
The smart chappy running the common parts end of the stock room at the Base Field Maintenance Shop, San Marcos, Texas, has a swell answer. Outside his stock room he has a big board, on which is displayed one each of every bolt, nut, screw, and similar piece of hardware he carries. Even the tubing fittings and so on are there. So when a man needs a part for which he doesn't know the exact description or the part number, he looks on the board and finds it. Once found, he notes the number printed under it on a handy note pad nailed up alongside the board, and then goes to the window to draw it. This system saves no end of time and hunting around, keeps "Browsers" out of the stock room and makes everyone happy. Could be carried still farther and include gaskets and so on.

THE RIGHT EQUIPMENT FOR THE JOB

Some joes like to live dangerously; they always go around testing **Safety Margins.** They don't actually know that's what they're doing. Usually its just a case of being too lazy to get the right piece of equipment for the job at hand, so they use what's handy at the time. No one is more surprised when something snaps or unravels, as a result, and the same jokers usually ask . . . "Wha' hoppen?"

Like this, for instance: A while back Ordnance had to go out and bring in an M7 trailer that had headed for the cornfields. They also had to unwrap the towing truck from a telephone pole and try to straighten up the pole, too. So what happened??? One of the margin-testers we mentioned above had loaded the 2-ton trailer with a 5-1/2-ton load, and then pulled it with a 1-1/2-ton truck.

The fact that the hitch snapped and let the loaded trailer take to the timber is an anti-climax. You or I could have told him it would happen. The next time he shouldn't have to be told.



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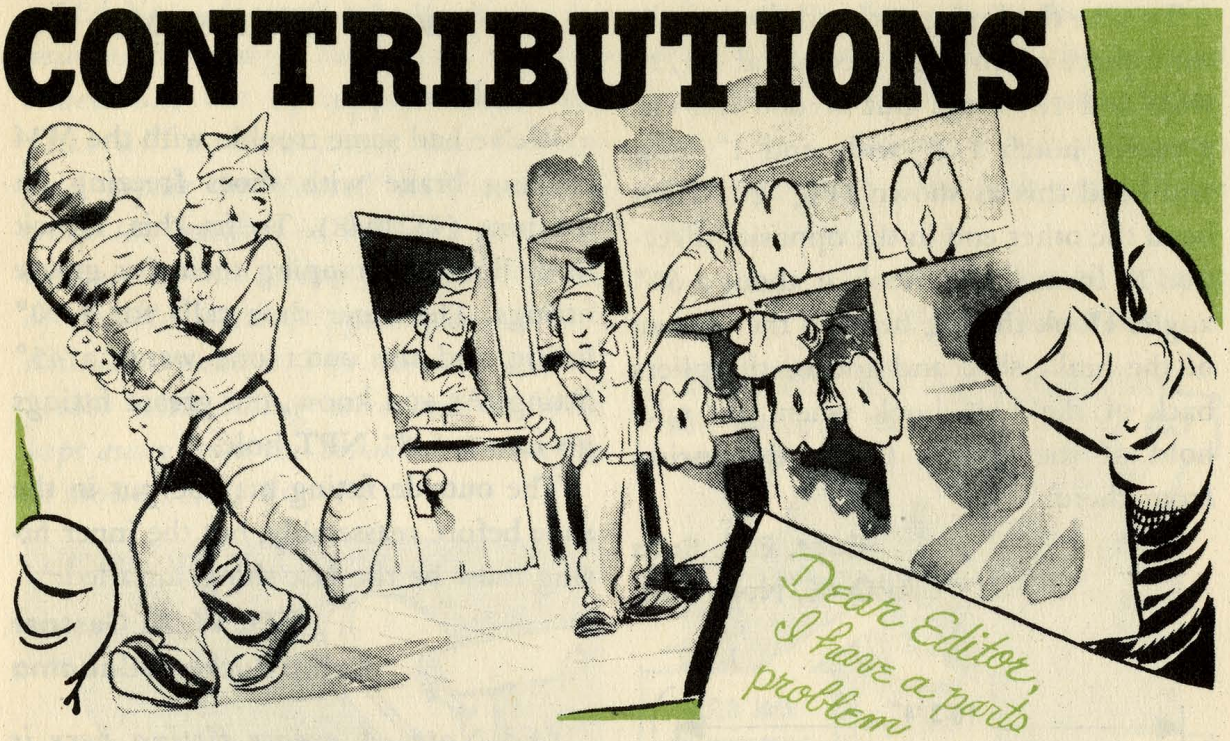


CIRCUIT-BREAKER FIX

Dear Editor,

Before we saw your M38 circuit breaker fix on page 83, of PS No. 3, we had solved the same problem for ourselves in a little different way. We simply ran a strip of sheet metal from the bottom of the dashboard to the firewall so that it was between the circuit breaker and the big feet. Four sheet metal screws held it.

Mr. F. H. George
Edgewood, Maryland

HOOK FOR LOCK WASHERS

Dear Editor,

Here's a little gadget for getting off the lock washer between the two nuts holding in the wheel bearings on Jeeps, 3/4-ton and 2-1/2-ton jobs.

Make it from an old choke cable or throttle cable (Fig. 1).

Just cut the cable off about six inches from the knob and bend it on the end to form a little hook. You can then reach in and flip the washer right out. Sure is a time and work saver.

PFC J. A. Galipeaux
APO 301, San Francisco

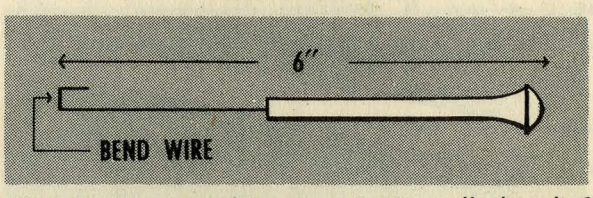


Fig. 1—You got big paws? You all thumbs? Then let this hook snag your lock washers.

BRAKE-SPRING GUIDE

Dear Editor,

I find our brake-spring pliers are obsolete for the M37 3/4-ton truck because the bonded linings have no rivet hole to anchor the pliers while removing the brake return-spring. Without an added tool, the lining would be all chewed up.

To save the lining and still do the job, cut a piece of 10 gage sheetmetal 1-1/2" wide and 12" long. Out of one end cut a center notch 1/2" wide and 1" long and bend this as shown (Fig. 2). Then bend the other end in the opposite direction to form a 1/4" hook at about a 60° angle. Hook the big bend to the bottom of the brake shoe and anchor the pliers back of the 1/4" hook when you take hold of the spring. Guide the spring from there.

Capt. E. J. Ruta
APO 46, New York

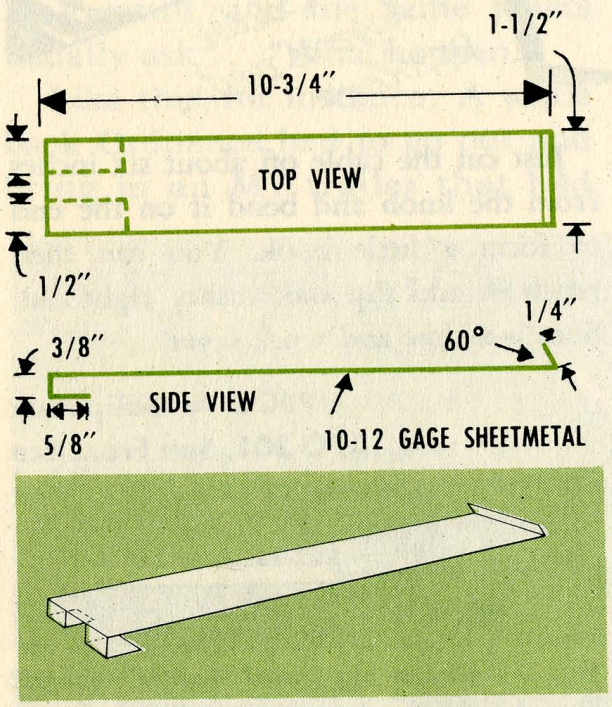


Fig. 2—3/4-ton M37 brake springs come out easier if you anchor pliers to this guide.

(Ed Note—Looks like a mighty fine idea. But if you have an M135 around, and the 2nd echelon tools that go with it, the one listed on page 53 of TM9-819A, Item K (7950060), will also do the trick. Stick the handle with the spring on it into the spring-hole and let it slide, if you're putting it in, or vice versa if you're taking it out.)

PARKING BRAKE SHOES

Dear Editor,

We've had some trouble with the M34 parking brake with shoes freezing on the pins (7521448). To fix this, I took to drilling and tapping them for grease fittings. The inner shoe calls for a 90° fitting and the outer one wants a 45° fitting. As you know, the grease fittings go into a 1/8" NPT hole.

The outside fitting may be put in the shoe before reassembly, but the inner fitting must be the last thing installed.

SFC W. A. Gessner
Camp Rucker, Alabama

(Ed Note—A grease fitting here is fine, but go easy on the grease to keep it off the brake shoes.)

MUFFLER MENDING

Dear Editor,

At our motor pool when we can't get a replacement for a busted muffler we use a piece of sheet steel and furnace cement to patch the old one (Fig. 3). This mending has solved our problem many times.

SFC D. Dickerson
Travis AFB, Cal.

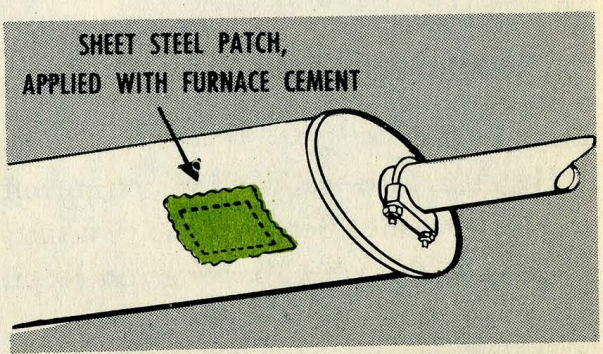


Fig. 3—This is one way to patch a gash in that muffler till a replacement comes thru.

(Ed Note—It won't take the place of a new muffler, Sarge, but if you can't jog a new one out of supply, almost any patch will do in a pinch. Our favorite field repair for busted mufflers is to wrap the muffler in asbestos paper—if we have it—and in any case pull a sleeve of flexible metal [ripped-open oil can, will do] around it. The sleeve is held together with baling wire and its joint kept away from the break in the muffler as shown below Fig. 4.)

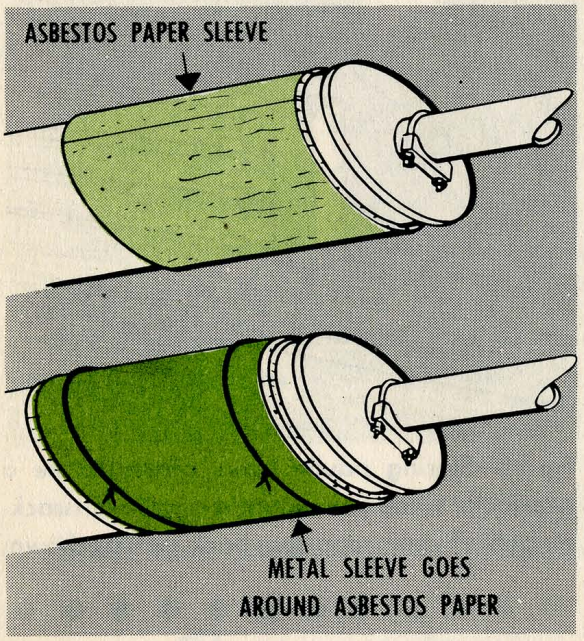


Fig. 4—Nothin' subs for a good muffler, but here's another patch that'll work in a pinch.

TRANSMISSION JACK

Dear Editor,

Here's how we made ourselves a transmission jack for use in the field, when we couldn't get a regulation one. You take a piece of metal, 8" x 7" and 1/4" thick, and drill holes at each corner, large enough for 5/8" nuts and bolts (Fig. 5). Weld nuts in the metal holes and grind the point of the bolts to bullet shape, about 1/4" from the end (this is for a steady fit on the transmission). Save the threads on the bolts so you can adjust them to the transmission. Then weld a regular GI jack to the center of the plate. The jack can still be used in the shop.

Pvt M. Woods
APO 20, San Francisco

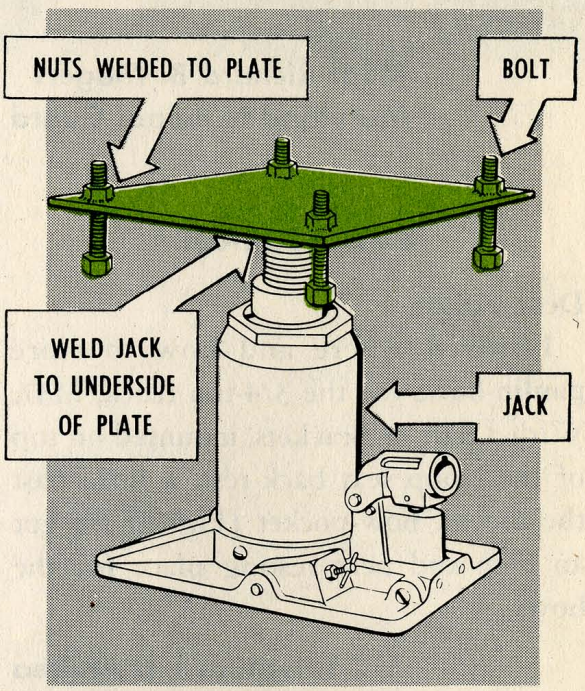


Fig. 5—Here's the solution, if you've been minus a jack—try this on your transmission.

(Ed Note—Good idea, but you could probably get more use out of your jack if you made the plate removable. This could be done by welding a short piece of pipe, about 2" long, to the plate. To be successful, this pipe would have to fit snugly over the top of the jack. For added stability you might also weld a plate to the base of the jack.)

LOOSE WHEEL-BEARINGS

Dear Editor,

On a recent inspection we found loose rear-wheel-bearings on some M37's. The

reason was that the Lock, adj. nut assy wasn't entered in any one of the holes by the dowel pin of Nut, adj. hub bearing, w/pin (inner).

Upon removing the Nut, adjustment, hub bearing (inner), we found that the dowel pin was not properly located, so we used a new nut and everything was OK.

MSgt Richard B. Magers
Maryland National Guard

BOW STORAGE

Dear Editor,

I solved where and how to store paulin-bows for the 3/4-ton truck, M37. With a pair of brackets, mounted on top of the troop seat back-rest, a little past the second bow-pocket (Fig. 6) we got an easy and neat resting place for the bows.

SFC Salvatore J. D'Andrea
APO 6, San Francisco

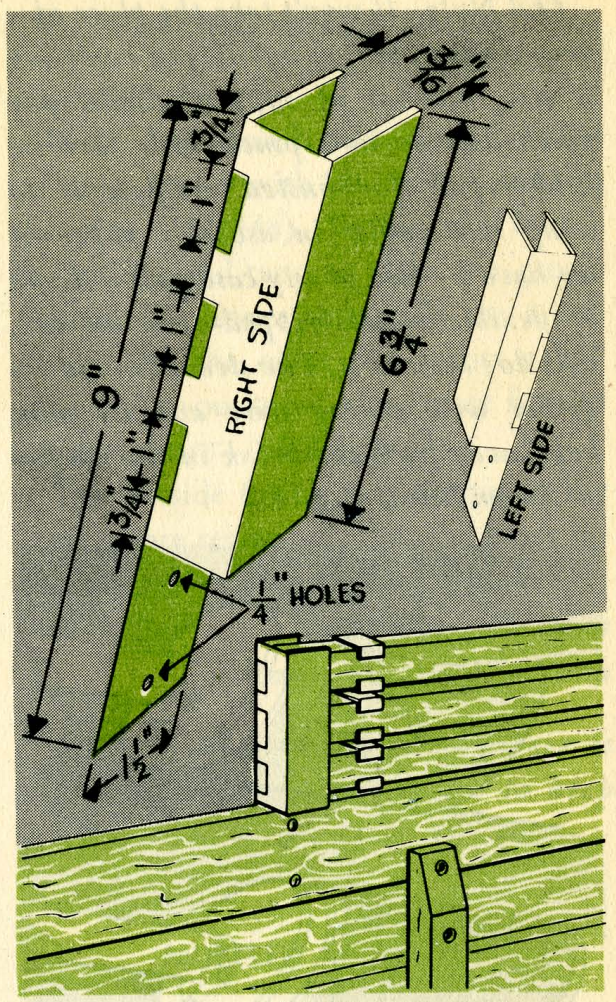


Fig. 6—Storing paulin bows ceases to be a headache when you mount a couple of brackets behind your troop-seat back-rests as shown.

Continued from page 427

vent over-filling in case some oil wasn't drained.) Continue to run engine until converter pressure gage shows normal (40-45 lbs) without the needle fluttering and until oil temperature rises, then reduce engine speed to idle (600-rpm), now add or drain oil until level in the reservoir remains constant at the full mark on the dipstick.

Check daily. Check after operation (while oil is hot), if vehicle has been standing, start engine, engage master clutch to operate torque converter and run five minutes to bring oil to its normal operating temperature. With engine running at idle (600-rpm), master clutch engaged and oil temperature at normal, check oil-level on bayonet gage. Add or drain oil to bring level even with full mark.

Final Drives:

Change every 100 hours. Drain while the oil is hot. Fill (10 qts) until oil is level with plug hole.

Check daily. This check is to make sure oil is level with plug hole.

Half-Mast

Connie Rodd's BRIEFS

Tire inflation

To make it easier on your 'ide and float you around like on a magic carpet, there are new tire inflation specs for your 7.00 x 16, P. R. NDCC tires. Your M38, M38A1, the new 1/4-ton ambulance, and the M100 1/4-ton trailer, use these tires as standard equipment. The following figures will tell you when to hang up your hose.

New Specs

Highway	25 psi
Cross Country	25 psi
Sand, Mud, Snow	10 psi

Battery lifter

Guess it went in one eye and out the other—that M37 and M38 battery lifter pictured in PS #8, page 321, will snatch **2HN** and **not** 6TN batteries. The 6TN's have handles on their ends that solve the problem.

Reservoir razor

You'd better probe with wary fingers when you're fishing around for sediment at the bottom of the air-cleaner reservoir on your 2-1/2 ton Reos or Studebakers. There's a sharp inner edge on the oil-reservoir baffle that can do a job like a razor.

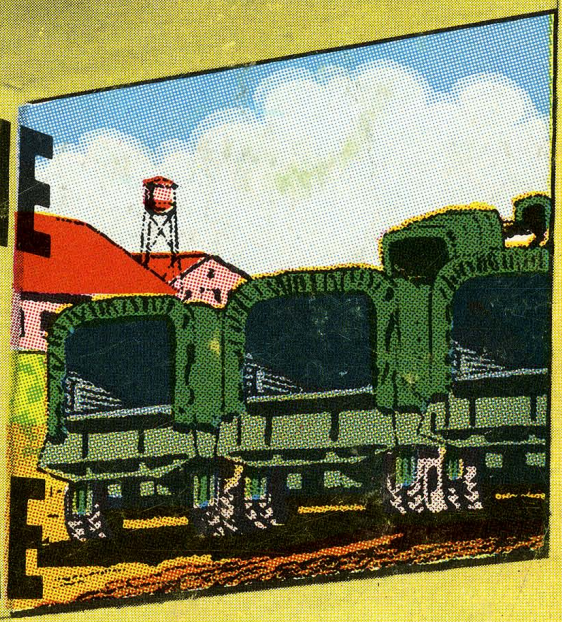
Low voltage tester

One type of low voltage circuit-tester in the supply system (ORD 1-41, Stock No. 17-T-5575-50) does not look like PS #8 showed when describing how to use adapters with the testers for testing 24-volt equipment. What's more, if you have Low Voltage Circuit Tester, Stock No. 17-T-5575-50, you won't be able to make tests 8 and 9 like PS said. So-o-o, if your tester has no field rheostat, you'll have to make your voltage-regulator and cut-out-relay tests a two-man operation. Have someone use the accelator pedal as a substitute for the field rheostat and rev the engine up and down while you take the readings.

Where's that gun book?

That "gettin' away" lil' debbil, the Howitzer gun book, is being put in its place—and kept there—by enterprising gunners at Fort Benning, Georgia. A clip in the sight box does the trick by holding the log book securely in place. So long as the sight box is there, the log book will be, too.

DEADLINE BEGINS AT HOME



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